

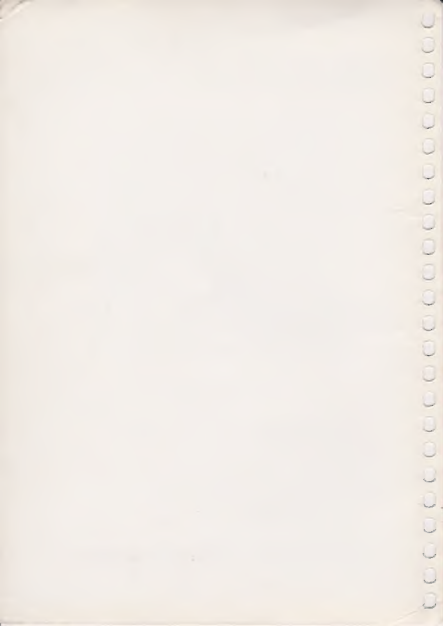
APOLLO 18 MISSION SIMULATION



MISSION FLIGHT PLAN

**JSC-2225
GENERIC, REV G**

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APOLLO THE MOON MISSIONS

System Requirements: Pentium 60
- 16MB ram - 1MB graphic ram -
6X CD - sound card

Install Notes: To insure proper
installation close all programs
(screen savers, browsers,
Answering machines etc.)

Operating Notes: The training disk
must be played in 256 colors.
The mission disk should be played
in 16 bit color.

TECHNICAL SUPPORT

Please view the README.TXT file
for any last minute changes not
included in this manual.

In the event of any technical
problems please contact our
Customer Services department at
the following address:

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e-mail: helpdesk@project2.com
or check the helpdesk page at
<http://www.project2.com>

For free technical support in the
UK please call: 01603 626 860
Monday - Friday 9 a.m. to
5.30 p.m.

Before calling technical support,
please follow these steps:

1. Check you manual thoroughly
2. Gather all the information that
applies to your problem
3. Write down all the steps you
have taken to solve the problem
4. Be sure you know your
hardware configuration,
operation system version,
memory, monitor type etc.

APOLLO 18 POCKET CHECKLIST

FLIGHT DATA FILE

JSC-A18

MISSION OPERATIONS DIRECTORATE

OPERATIONS DIVISION

GENERIC, REV.8 JUNE 25, 1973

NOTE: THIS BOOK INCLUDES TRAINING FOR ALL MISSIONS
AND THE
APOLLO 18 FLIGHT PLAN
(NOT FOR SUBSEQUENT FLIGHTS)

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1. The first part of the paper is devoted to a general discussion of the problem of the existence of solutions of the system of equations (1) and (2) for arbitrary values of the parameters α and β . It is shown that the system has solutions for all values of the parameters α and β if and only if the condition $\alpha + \beta > 0$ is satisfied. In this case the solutions are unique and can be found by the method of successive approximations.

2. In the second part of the paper the problem of the existence of solutions of the system of equations (1) and (2) for arbitrary values of the parameters α and β is considered. It is shown that the system has solutions for all values of the parameters α and β if and only if the condition $\alpha + \beta > 0$ is satisfied. In this case the solutions are unique and can be found by the method of successive approximations.

3. In the third part of the paper the problem of the existence of solutions of the system of equations (1) and (2) for arbitrary values of the parameters α and β is considered. It is shown that the system has solutions for all values of the parameters α and β if and only if the condition $\alpha + \beta > 0$ is satisfied. In this case the solutions are unique and can be found by the method of successive approximations.

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June 10, 1964

OVERVIEW

Apollo - The Moon Missions is a game simulation that places you into the rigorous Apollo astronaut training program.

In order to experience an actual mission, you will be required to learn in detail the Apollo rocket and spacecraft systems. These hardware systems include the Saturn V multi-stage rocket system, the command module, the service propulsion system and the lunar module.

Players need to first thoroughly review the Training Disk and complete all of the astronaut written and flight simulation tests. Once all training tests have been completed satisfactorily, you will be assigned a top-secret Apollo mission. Players are allowed to go directly to the Kennedy Space Center launch complex 39 and begin a launch without any training. **However, this is not advisable.**

If you wish to launch without training, select 'Game Options' from the main screen. Then select 'Load Game.' Choose the file 'Launch' and press OK. Then, on the main screen, select 'Liftoff.' You will be presented with a prompt screen allowing you to either continue on to launch, or train in the simulator of your choice.

HOW DO I INSTALL THE GAME?

To install *Apollo - The Moon Missions*, first place the Taurus Littrow Mission Disk into your CD player. If you have Windows 95, and autorun is active, the game setup will start automatically. If autorun is not enabled, select Explorer or File Manager and double click the corresponding setup icon. ('Setup' for Windows 95) The install screen will appear. Press 'Install' and follow the screen prompts.

IMPORTANT INSTALL NOTES

This simulation requires 90 MB of storage space on your hard drive. If you have less than 32 MB of system ram, and your video display card does not have 4 MB, then you must play the Training Disk in 256 color mode.

THE TRAINING DISK MUST BE PLAYED IN 256 COLOR, 640x480 MODE. THE TAURUS LITROW MISSION DISC SHOULD BE PLAYED USING 16 BIT OR TRUE COLOR.

If you experience a drastic color shift, system crash or system freeze while reviewing the Training Disk, check your system display (located in Win 95 Settings control panel) to make sure you are in 256 color and 640x480 mode.

DO NOT HAVE ANY OTHER PROGRAMS RUNNING (SCREEN SAVERS, ANSWERING MACHINES, ETC.) WHEN YOU INSTALL THIS PRODUCT.

HOW DO I START?

All astronaut trainees should become familiar with the command module, lunar module panels and the spacecraft systems. Select 'Command Module' or 'Lunar Module' in Astronaut Training. Work your way through all the buttons and listen to the description of each system. During a mission, you will be required to know where all systems buttons are located and how they work with each other.

Manned space flight is very dangerous. Activating or shutting down the wrong system hardware may kill you.

In space, you are traveling over 4,000 feet per second, and time is of the essence. In most cases, such as a launch or mission flight, you are given only 5 or 10 seconds to find a system button, enter a gimbal rate, complete a thrust duration / percentage setting or switch on vital spacecraft hardware systems.

Astronauts must know their spacecraft and all of its accompanying systems. Apollo Astronaut Trainees should learn the Apollo flight profile. This includes the lunar landing and the EVA (Extra Vehicular Activity.)

It is strongly advisable for all Apollo Astronauts to complete the written tests and the flight simulations. By accomplishing these, Trainees will have the necessary experience to dock, land and deal with in-flight mission emergencies.

THE GAME

The game box should contain this user's manual (Apollo Flight Plan,) CD-ROM Training Disc, CD-ROM Apollo Taurus Littrow Mission Disc, and a product registration card.

The purpose of this Flight Plan is to supply you, the pilot, with the appropriate steps and procedures to successfully complete a manned lunar mission. It is a good idea to use this Flight Plan during the mission. Some mission control center (MCC) radio transmissions may not be received or might be garbled, which is called LOS (loss of signal). Use of this Flight Plan may be helpful to pilots during LOS periods.

Inexperienced players should thoroughly review the CD-ROM Training Disc before attempting a complete mission.

COMMUNICATING WITH MISSION CONTROL

Communicating with mission control is the most important element for successful completion of the Apollo mission. All radio traffic to and from the spacecraft is done via the primary and secondary spacecraft radio equipment.

Communication from mission control is sent to the player at a realistic transmission rate, requiring the player to acquire highly developed listening skills.

It is critical that the player listen carefully to all commands, and respond when appropriate. Failure to do so will result in hardware failure and/or the mission being terminated.

WHAT IS LOS?

Loss of signal. Players should note that there are periods of LOS when the spacecraft is out of range from NASA ground track stations. During these periods, there will be no communication from MCC, and the pilot must solve all flight and hardware problems him/her self.

By reviewing the Training Disc, the player will receive adequate instruction as to the workings of the Apollo space flight hardware and procedures necessary to safely complete the mission.

PLAYER RESPONSE

The following are the key phrases that the game and mission control will understand and you must reply to (type out and be ready to enter) when called: **GO, COPY, NO GO.** Generally, during major events such as liftoff, major engine burns and landing you will be asked to respond to mission control.

NOTE:

All communication with mission control is accomplished by mouse clicking

the AOS button on panels CSM3 & LM3. This is done for all major mission events. Listen for "Apollo 18" or "Apollo do you copy?" All astronauts must respond to mission control.

THE MISSION

Players are assigned missions depending on the level of competency after attending the Manned Spacecraft Training Division located on the Training Disc.

Upon completion of each training level (Rookie Pilot, Commander), the player must prove his/her proficiency through written testing and Apollo flight simulation.

After successfully completing all testing, the pilot is assigned a specific mission.

Once in progress, missions are scored by the following criteria:

- 1 - launching on time
- 2 - trans lunar insertion (TLI) burn performed on time
- 3 - nominal course correction burns
- 4 - accurate spacecraft docking
- 5 - accurate lunar landing
- 6 - successful extra vehicular activity (EVA)
- 7 - on time lunar liftoff
- 8 - proper management of fuel and consumables
- 9 - accurate reentry

After completing a successful mission, players are eligible for awards, such as mission patches, rank insignias and mission certificates. (See "Awards" section)

LEVELS OF DIFFICULTY

The simulators are divided into three levels: Rookie Pilot, and Commander. Each player must take a written computer test that includes background information and hardware orientation. There are several sets of tests for each level to ensure performance capability.

Once the player has completed the Rookie level, he/she is entitled to attend a flight simulator session, starting with a simulated Saturn V launch and reentry. The second area of testing is the Pilot level. This level includes a more difficult written test and flight simulation which includes lunar module and command module docking.

The third and final level is the Commander level, which is the most challenging. Players must be proficient in all aspects of the Apollo mission. This level culminates with a moon landing simulation and liftoff.

Once all three levels have been successfully completed, players are exposed to a top secret Department of Defense (DOD) briefing and given their lunar mission.

After successful completion of the first mission, players are given the opportunity to partake in upcoming missions by contacting

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THE FLIGHT PLAN

The game designers have replicated, as closely as possible, actual NASA flight plan books so that the player may have as realistic a space flight experience as possible.

The Flight Plan is divided into eight sections:

- 1 - Overview
- 2 - Glossary

- 3 - Cue cards: this information allows the player a quick glance at upcoming mission events
- 4 - CSM caution and warning indicators
- 5 - Lunar module caution and warning indicators
- 6 - Apollo 16 mission
- 7 - Spacecraft systems
- 8 - Lunar map

This book should be used during the mission for review, and during periods of LOS (loss of signal) when the player must determine, diagnose and correct hardware problems.

THE COMMAND MODULE

The command module is divided into five panels.

- 1 - CSM-1: this panel is used by the command module pilot for liftoff and reentry. Players may switch to the other command module panels by selecting CSM-2 or CSM-3.
- 2 - CSM-2: this panel is used by the spacecraft commander to monitor all command module vital functions. Players may switch to the other command module panels by selecting CSM-1 or CSM-3.
- 3 - CSM-3: this panel is used by the lunar module pilot and displays most of the command module's systems. Players may switch to the other command module panels by selecting CSM-1 or CSM-2.
- 4 - CSM-4: this panel is only visible when the align sight button is activated on panel CSM-2. This panel is used only for LM docking.
- 5 - CSM-4 Starfinder: this panel is only visible when the align sight button is activated on panel CSM-2 and the Starfinder system is engaged. This panel is used for guidance and course adjustments, usually before engine firings.

NOTE: Your Starfinder has a pre-loaded star map. Player must match the appropriate stars with the three circles on the crew optical align sight to insure a precise trajectory. Further information regarding command module systems and flight hardware can be obtained from the CD-ROM Training Disc.

THE LUNAR MODULE

The lunar module is divided into four panels.

- 1 - LM-1: this panel is used by the spacecraft commander to land on the moon. It includes the horizon indicator and the IMU computer display. Players may switch to the other lunar module panels by selecting LM-2 or LM-3.
- 2 - LM-2: this panel contains the radar display which is critical for the pitchover phase of the lunar landing mission. It also includes the primary lunar module system controls. Players may switch to the other lunar module panels by selecting LM-1 or LM-3.
- 3 - LM-3: this panel contains all the vital engineering systems for the lunar module. Players may switch to the other lunar module panels by selecting LM-1 or LM-2.

It is essential that the player monitor LM-1, LM-2, and LM-3 during the descent to the lunar surface.

4a - LM-4 (LANDING PHASE) Landing Display: this panel is used for landing the lunar module precisely at the pre-determined landing site. Access can be obtained by selecting the align sight system located on LM-2 and engaging the landing display.

4b - LM-4 DOCKING PHASE Align Sight: this panel is used for docking with the command module once the lunar descent has been completed.

Access can be obtained by selecting the alignment system located on LM 2. Further information regarding lunar module systems and flight hardware can be obtained from the CD-ROM Training Disc.

THE SATURN V ROCKET

The Saturn V rocket is controlled from the command module panels CSM 1, CSM-2, and CSM 3.

The rocket is discarded shortly after liftoff when the spacecraft reaches Earth orbit. A detailed description of the Saturn V rocket is available on the CD-ROM Training Disc.

KENNEDY SPACE CENTER

All space flight launches occur from the Kennedy Space Center.

Access to the Kennedy Space Center is available by placing the Taurus-Littrow Mission Disc into the CD-ROM player.

JOHNSON SPACE CENTER

The Johnson Space Center is the central location for all manned spacecraft training activities.

It should also be noted that from the time the Saturn V rocket clears the tower at Kennedy Space Center, mission management is conducted from the Mission Control Center located at the Johnson Space Center.

Players must test and practice flight simulation at JSC before they can launch into space. The Johnson Space Center is only available on the Training Disc.

AWARDS

Upon successful completion of training, players are eligible to purchase flight patches.

Patch #1: Pilot wings (customized name)	\$9.95
Patch #2: Saturn V rocket patch	\$9.95
Patch #3: Command Module patch	\$9.95
Patch #4: Lunar Module patch	\$9.95
Patch #5: Apollo 18 Mission patch	\$9.95

Additional patches are available upon successful completion of the mission.

Also, other merchandise is available.

See mission merchandise brochure.

FUTURE MISSIONS

Additional top-secret missions are available upon successful completion of Apollo 18.

These future missions will challenge the player in every aspect of space flight, including lunar surface excursions with the lunar rover and dangerous lunar exploration.

Additionally, the missions will involve ancient hidden lunar mysteries that the U.S. government keeps highly confidential and classified. These lunar mysteries may reveal secrets that the government does not want exposed to the world.

To purchase upcoming missions, special spacecraft upgrades, merchandise, or game information, ask your local software retailer or contact AIM.

SOFTWARE, LTD. on the internet at

<http://www.aimgames.com>

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**Special thanks to the NASA Manned Spacecraft Center,
Houston, Texas:**

Steve Nesbitt - Chief of External Affairs Branch
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Charles Clendanie - Public Affairs Officer
Debbie Sharp - Public Affairs Officer
Eileen Walsh - Public Affairs Officer

**This game is dedicated to the courageous
men and women of America's space program.**

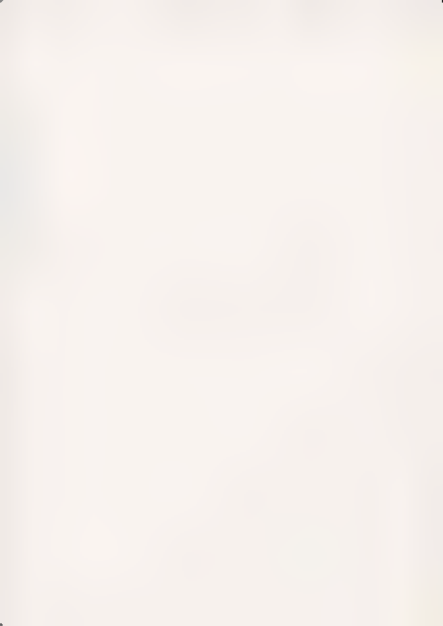
Contact www.simgames.com for pre-flight briefing data on all upcoming
missions.

APOLLO 19, 20, 21, 22, 23 & 24 are your next missions.

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Las Vegas, NV

GLOSSARY

JSC LUNAR GENERIC, REV K 3/15/73



Glossary

BO1 Alarm

This indicator warns the crew of computer memory and data overload

A Battery

This button activates the A battery, which supplies emergency back-up electricity for the lunar module systems

Ablating Materials

Special heat-dissipating materials on the surface of a spacecraft that vaporize during reentry

Abort

The unscheduled termination of a mission prior to its completion

Abort Arm

This button arms the lunar module abort sequence computer which can be fired manually or under computer control during the descent stage only

A Bus

This button allows electrical current to flow through the single A bus circuit, providing power to the command module's CSM 1 and in the lunar module panel 1

Accelerometer

An instrument to sense accelerative forces and convert them into corresponding electrical quantities usually for controlling, measuring, indicating or recording purposes

AC Gauge

This gauge indicates total usable alternating current available on board the spacecraft. Located in both the CSM and LM

Adapter Skirt

A flange or extension of a stage or section that provides a ready means of fitting another stage or section to it

AGS

This button activates the automated guidance system. During an aborted landing attempt, this system stabilizes and controls the lunar ascent stage

Align Sight

This button activates the optical targeting device which allows the lunar module and command module to dock with each other

Altitude

This indicator allows the pilot to read the altitude relative to the Earth or lunar surface. This is done in feet as well as miles

Amps Gauge

This gauge indicates total usable amperage supplied by all fuel cells and batteries on board the spacecraft

Antenna Mast Bravo

This button deploys the bravo directional antenna system, which is used for narrow band communication and data transmission and reception

Antenna Mast Omni

This button deploys the omnidirectional antenna mast system which is used for wide band communication and data transmission and reception

Antipode

Point on surface of planet exactly 180 degrees opposite from reciprocal point on a line projected through center of body. In Apollo usage antipode refers to a line from the center of the Moon through the center of the Earth and projected to the Earth surface on the opposite side. The antipode crosses the mid-Pacific recovery line along the 165th meridian of longitude once each 24 hours

AOS

This indicator when lit with a green light tells the crew they have

acquisition of signal with mission control

Apocynthion

Point at which object in lunar orbit is farthest from the lunar surface -- object having been launched from body other than Moon (Cynthia, Roman goddess of Moon,

Apogee

The point at which a Moon or artificial satellite in its orbit is farthest from Earth

Apolune

Point at which object launched from the Moon into lunar orbit is farthest from lunar surface. e.g., ascent stage of lunar module after staging into lunar orbit following lunar landing

Arm Joystick

This button activates the joystick controller, which is used during docking maneuvers

Ascent Descent Rate

This button activates the display and shows the lunar module ascent rate after liftoff from the lunar surface, or the descent rate when descending to the lunar surface

Ascent Fuel

This gauge gives the crew a graphic description of the lunar module ascent stage fuel status

Ascent Stage

This button starts the ignition sequence for the lunar module's ascent engine

Ascent Tank

This button opens the ascent tank fuel valve on the LM

Ascent Track

The ascent track button is located below the velocity display screen. When activated, this indicator gives the pilot a detailed view of the vehicle launch window which includes "not to

exceed" limits and warnings

Attitude

The position of an aerospace vehicle as determined by the inclination of its axis to some frame of reference; for Apollo, an inertial, space-fixed reference is used

A Under Volt

This indicator warns the crew that the electrical bus is not passing proper electrical current and voltage

Auto Pilot (Indicator)

This indicator alerts the crew that the auto pilot has failed

Auto Pilot (Button)

Located in both the command and lunar modules, this button activates the primary auto pilot for the entire space vehicle. This includes propulsion, reaction control, flight guidance, environmental control, and life support

Auto Sequence

Located in the engine command panels of both the CSM and LM, this button starts the computer control of the engine ignition sequence. It is used to control all of the Saturn rocket and the CSM/LM engine systems

Back-Up Battery (Gauge)

Located in the LM electrical status panel, this gauge indicates the available back-up battery electrical power

Back-Up Battery (Button)

This button, when activated, supplies the spacecraft with emergency power. The life expectancy of these batteries is not longer than 5 minutes. Located in both the CSM and LM

Back-Up Computer

This button activates the emergency computer system that acts as a back-up for guidance, engine control, and life support, if the primary computer

system fails. Located in both the CSM and LM

Battery A (Button)

This button activates the A battery, which supplies emergency back-up electricity for the service propulsion system and the command module. It is used primarily during reentry.

Battery A (Gauge)

This gauge exhibits total DC voltage stored in the A battery system. Located in the CSM and LM.

Battery A Low

This indicator warns the crew of low electrical current in the command module primary A battery. Located in both the CSM and LM.

Battery B (Button)

This button activates the B battery, which supplies emergency back-up electricity for the service propulsion system and the command module. It is used primarily during reentry.

Battery B (Gauge)

This gauge exhibits total DC voltage stored in the B battery system. Located in the CSM and LM.

Battery B Low

This indicator warns the crew of low electrical current in the command module primary B battery. Located in both the CSM and LM.

Battery C (Button)

This button activates the C battery, which supplies emergency back-up electricity for the service propulsion system and the command module. It is used primarily during reentry.

Battery C (Gauge)

This gauge exhibits total DC voltage stored in the C battery system. Located in both the CSM and LM.

Battery C Low

This indicator warns the crew of low electrical current in the command

module primary C battery. Located in both the CSM and LM.

B Battery

This button activates the B battery, which supplies emergency back-up electricity for the lunar module systems.

B Bus

This button allows electrical current to flow through the single B bus circuit, providing power to the command module's CSM 2, and in the lunar module panel 2.

B Under Volt

This indicator warns the crew that the B electrical bus is not passing proper electrical current and voltage.

Burnout

The point when combustion ceases in a rocket engine.

Bus Tie-Line

This button connects 2 or all 3 of the electrical bus sub-systems together, allowing the spacecraft additional electrical current in time of emergency or final reentry.

Cabin Pressure (Button)

This button adjusts the lunar module cabin pressure by opening and closing the main oxygen valve.

Cabin Pressure (Indicator)

This indicator warns the crew that a serious problem has occurred with the lunar module cabin atmosphere.

Cabin Repressurization

This button controls the atmosphere inside the space vehicle. It is used to adjust the cabin atmosphere after docking with the lunar module.

Canard

A short, stubby wing-like element affixed to the launch escape tower to provide CM blunt end forward aerodynamic capture during an abort.

Caution and Warning

This button activates the entire spaceship's caution and warning system. Located in both the CSM and LM.

C Battery

This button activates the C battery, which supplies emergency back-up electricity for the lunar module systems.

C Bus

This button allows electrical current to flow through the single C bus circuit, providing power to the command module's CSM 3, and in the lunar module panel 3.

Celestial Guidance

The guidance of a vehicle by reference to celestial bodies.

Celestial Mechanics

The science that deals primarily with the effect of force as an agent in determining the orbital paths of celestial bodies.

Cell 1 Gauge

This gauge is located in the electrical status panel of the CSM. It allows the crew to check fuel cell 1 electrical status which includes temperature and output voltage.

Cell 2 Gauge

This gauge is located in the electrical status panel of the CSM. It allows the crew to check fuel cell 2 electrical status which includes temperature and output voltage.

Cell 3 Gauge

This gauge is located in the electrical status panel of the CSM. It allows the crew to check fuel cell 3 electrical status which includes temperature and output voltage.

Channel 1

This display allows the crew to tune the primary radio reception frequency so they may receive voice

transmission from mission control and the command module or lunar module.

Channel 2

This display allows the crew to tune the secondary radio reception frequency so they may receive voice transmission from mission control and the command module or lunar module.

Chutes Deploy

This button is used during reentry to deploy the 3 main parachutes, allowing the spacecraft to land gently in the ocean.

Cislunar

Adjective referring to space between Earth and the Moon, or between Earth and Moon's orbit.

Closed Loop

Automatic control units linked together with a process to form an endless chain.

Computer

This indicator alerts the crew to lunar module and/or command module basic computer problems.

Computer Status

This button displays the entire computer system, including diagnostic functions. Located in both the CSM and LM.

Contact

This green light indicator allows the crew to see when the lunar module contact probes located on the descent stage make contact with the lunar surface.

CSM

Command service module.

CSM Breaker

This button is the primary electrical circuit breaker for the command service module and its supporting systems.

CSM RCS

This button is used to enable the command service module's reaction control systems

CSM System

This button activates primary essential systems in the command module

C Under Volt

This indicator warns the crew that the C electrical bus is not passing proper electrical current and voltage

Data Display

This button turns on the data radar display screen

Data Radar Display

This video screen displays all command module system data as well as radar and tracking information

DC Gauge

This gauge indicates total usable direct current available on the spacecraft. Located in both the CSM and LM

Deboost

A retrograde maneuver which lowers either perigee or apogee of an orbiting spacecraft. Not to be confused with deorbit

Declination

Angular measurement of a body above or below celestial equator measured north or south along the body's hour circle. Corresponds to Earth surface altitude

Delta V

Velocity change

Descent Fuel Gauge

This gauge gives the crew a graphic description of the lunar module descent stage fuel status

Descent Stage

This button starts the ignition sequence for the lunar module's descent engine

Descent Tank

This button opens the descent tank fuel valve

Digital Computer

A computer in which quantities are represented numerically and which can be used to solve complex problems

Dock

This button allows the pilot to engage the docking mechanism or it allows the pilot to release the lunar module from the command module

Down-Link

The part of a communication system that receives, processes and displays data from a spacecraft

ECS Rates

This button engages the environmental control system, which includes oxygen, heating, and cooling. Located in both the CSM and LM

ECS Breaker

This button controls main electrical current to the environmental control system and its supporting hardware

Engine Breaker

This button acts as a primary electrical circuit breaker for the main propulsion system. Located in both the CSM and LM

Engine Fail

This indicator warns the crew that the primary engine has failed and an abort sequence must be initiated. Located in both the CSM and LM

Engine Heater

This button activates the engine heating system and prevents fuel and oxidizers from freezing. Located in both the CSM and LM

Entry Corridor

The final flight path of the spacecraft before and during Earth reentry

Entry Track

The entry track indicator is located below the velocity display screen. When activated, this indicator gives the pilot a detailed view of the Earth return corridor which includes "not to exceed" limits and warnings.

Ephemeris

Orbital measurements (apogee, perigee, inclination, period, etc.) of one celestial body in relation to another at given times. In space flight, the orbital measurements of a spacecraft relative to the celestial body about which it orbited.

Escape Velocity

The speed a body must attain to overcome a gravitational field, such as that of Earth; the velocity of escape at the Earth's surface is 36,700 feet per second.

EVA Charge

This button, when activated, recharges the oxygen in the astronauts' extra vehicular activity backpacks.

Explosive Bolts

Bolts destroyed or severed by a surrounding explosive charge which can be activated by an electrical impulse.

External Camera

This button, when depressed, allows the crew to view external camera feeds supplied by the launch pad or on-board camera systems. Located in both the CSM and LM.

Fairing

A piece, part or structure having a smooth, stream-lined outline, used to cover a non-streamlined object or to smooth a junction.

Flight Control System

A system that serves to maintain attitude stability and control during flight.

Frequency 1

This display allows the crew to tune the primary radio to the appropriate transmission frequency so they may transmit voice and data to mission control and the lunar module and command module.

Frequency 2

This display allows the crew to tune the secondary radio to the appropriate transmission frequency so they may transmit voice and data to mission control and the lunar module and command module.

Fuel Cell

An electrochemical generator in which the chemical energy from the reaction of oxygen and a fuel is converted directly into electricity.

Fuel Cell 1

This button activates fuel cell 1, which is the primary source of electrical production for the spacecraft.

Fuel Cell 1 Fail

This indicator warns the crew that fuel cell 1 has failed and that batteries must be employed to supply electrical energy to the spacecraft.

Fuel Cell 1 Gauge

This gauge is located in the electrical status panel. It allows the pilot to check fuel cell 1 electrical status which includes temperature and output voltage.

Fuel Cell 1 Temperature

This indicator alerts the crew that the fuel cell 1 temperature is above limits.

Fuel Cell 2

This button activates fuel cell 2, which along with fuel cell 1, is the primary source of electrical production for the spacecraft.

Fuel Cell 2 Fail

This indicator warns the crew that fuel cell 2 has failed and that batteries

must be employed to supply electrical energy to the spacecraft

Fuel Cell 2 Gauge

This gauge is located in the electrical status panel. It allows the pilot to check fuel cell 2 electrical status which includes temperature and output voltage

Fuel Cell 2 Temperature

This indicator alerts the crew that the fuel cell 2 temperature is above limits

Fuel Cell 3

This button activates fuel cell 3, which is the primary source of electrical production for the service propulsion system and the command module

Fuel Cell 3 Fail

This indicator warns the crew that fuel cell 3 has failed and that batteries must be used to supply electrical energy to the command module

Fuel Cell 3 Gauge

This gauge is located in the electrical status panel. It allows the pilot to check fuel cell 3 electrical status which includes temperature and output voltage

Fuel Cell 3 Temperature

This indicator alerts the crew that the fuel cell 3 temperature is above limits

Fuel Flow

This button activates the fuel pump which supports the primary service propulsion and RCS systems

Fuel Low

This indicator warns the crew that the primary engine or the reaction control system propellants are dangerously low. Located in both the CSM and LM

Fuel Pump (Button)

This button switches on or off the primary fuel pump for the engines and the RCS

Fuel Pump (Indicator)

This indicator warns the crew that the lunar module or command module fuel pump has failed

Fuel System

This button activates the lunar module fuel system

G or G Force

Force exerted upon an object by gravity or by reaction to acceleration or deceleration, as in a change of direction. One g is the measure of force required to accelerate a body at the rate of 32.16 feet per second

Gear Lock

This button extends the lunar module's landing gear

Gimbal Rates

This button displays the entire spacecraft engine gimbal data located in both the CSM and LM

Gimbaled Motor

A rocket motor mounted on gimbal, i.e. on a contrivance having two mutually perpendicular axes of rotation so as to obtain pitching and yawing correction moments

G/N

This button activates the lunar module's guidance and navigation system

GNCS Rates

This button controls the guidance navigational control system, which is used to adjust and control the spacecraft trajectory and guidance related functions

Guidance System

A system which measures and evaluates flight information, correlates this with target data, converts the result into the conditions necessary to achieve the desired flight path, and communicates this data in the form of commands to the flight control system

H2O Stir

This button activates a mechanical stirring device which works in conjunction with the electrical heater to prevent the water tank from freezing.

H2O System

This indicator alerts the crew to a serious malfunction with the spacecraft water system.

Hatch

This button opens and closes the spacecraft hatch.

Heliocentric

Sun-centered orbit or other activity which has the Sun at its center.

Helium

This gauge is located in the electrical status panel on the CSM, and the cryogenics panel in the LM. It indicates total helium reserves on board the spacecraft which are required, in addition to oxidizer and hydrazine, to provide fuel for the service propulsion system.

Helium Flow

This button opens the primary valve which allows helium to flow into the service propulsion systems engine.

Helium Low

This indicator warns the crew of low helium gas which is used for the command module main engine propellant.

High Band

This button activates the high band display allowing the pilot to view a wide range radar signal.

High Temperature

This indicator warns the crew that excessive temperatures exist in the cryogenic tanks and systems.

Horizon Indicator

Commonly referred to as the B-ball, this indicator gives the pilot a horizon,

yaw, pitch, or roll indication while in flight and landing on the moon. Located in both the CSM and LM.

IMU

This button turns on the inertia measuring unit which is the primary device to navigate the spacecraft by using the stars and celestial targets. Located in both the CSM and LM.

Inertial Guidance

Guidance by means of the measurement and integration of acceleration from onboard the spacecraft. A sophisticated automatic navigation system using gyroscopic devices, accelerometers etc., for high-speed vehicles. It absorbs and interprets such data as speed, position, etc., and automatically adjusts the vehicle to a predetermined flight path. Essentially, it knows where it's going and where it is by knowing where it came from and how it got there. It does not give out any radio frequency signals so it cannot be detected by radar or jammed.

Injection

The process of boosting a spacecraft into a calculated trajectory.

Input

This button allows the pilot to input gimbal rates, guidance and navigation data directly into the spacecraft's primary computer. Located in both the CSM and LM.

Insertion

The process of boosting a spacecraft into an orbit around the Earth or other celestial bodies.

Internal Power

During the launch phase, external power emanates from the launch pad to the rocket.

This button switches the vehicle from using pad power to internal power moments before launch.

Inverter

This button activates the spacecraft's electrical inverter, which supplies AC to DC electrical current.

Inverter Fail

This indicator warns the crew that a serious electrical problem has occurred in the AC to DC converter.

LES Abort (Launch Escape System Abort)

This button controls the launch escape rockets which are used to jettison the command service module from the stack during launch.

LM

Lunar module

LM Jettison

This button activates the jettison device which releases the lunar module from its docking position with the command module.

LM System

This button activates all primary and essential systems in the lunar module.

Logic Fault

This indicator alerts the crew as to a serious computer software failure when landing the LM.

LOS

This indicator, when lit with a red light, tells the crew they have loss of signal with mission control.

Low Band

This button activates the narrow field radar system amplifying the radar image for close up viewing.

Main Breaker

This button allows electrical current to flow through the entire space vehicle system. Located in both the CSM and LM.

Main Bus

This button activates and allows electrical current to flow through the

main bus circuitry. Located in both the CSM and LM.

Main Bus Fail

This indicator warns the crew that the main bus electrical system has failed and that batteries must be started or a bus reroute must occur.

Main Pump

This button activates the main pump device which supplies coolant and gas to the various sub-systems on the command module.

Main Engine

This button controls primary ignition of the command module's service propulsion system engine.

Main Tie-Line

This button connects all electrical bus sub-systems together, allowing the lunar module to access any or all of its batteries and fuel cells.

Manual Fire

This button is used during emergency situations, such as computer failure, to manually fire the spacecraft's primary engines. Located in both the CSM and LM.

Master Alarm

This button and indicator, with an accompanying audio warning, alerts the crew to major malfunctions with the spacecraft and its systems. Located in both the CSM and LM.

Master Arm

Located in the engine command panel, this button is the first step in allowing the pilot to fire the main Saturn rocket engines and to fire the ascent or descent stage engines. Additionally, this button controls the command service module, primary engine, and reaction control systems during flight. Located in both the CSM and LM.

Memory Fail

This indicator alerts the crew as to a serious computer memory failure.

Mission Clock

This indicator displays mission elapsed time, and can be used as a countdown event clock. Located in both the CSM and LM.

Multiplexing

The simultaneous transmission of two or more signals within a single channel. The three basic methods of multiplexing involve the separation of signals by time division, frequency division and phase division.

Navigation Fault

Located in the master caution and warning system, this indicator alerts the crew to navigation problems. Located in both the CSM and LM.

O2

This gauge, located in the electrical status panel of the CSM and the cryogenics panes of the LM, indicates the total oxygen reserves available on the spacecraft.

O2 Flow

This button opens the primary valve which allows oxygen to flow into the spacecraft. Located in both the CSM and LM.

O2 System

This indicator alerts the crew that there is a serious oxygen problem occurring aboard the space vehicle. Located in both the CSM and LM.

Optical Navigation

Navigation by sight, as opposed to inertial methods, using stars or other visible objects as reference.

Oxidizer

In a rocket propellant, a substance such as liquid oxygen or nitrogen tetroxide which supports combustion of the fuel.

Oxidizer Flow

This button opens all valves and activates all pumps for the oxidizer.

propellants. Located in both the CSM and LM.

Oxidizer

This gauge, located in the electrical status panel of the CSM and the cryogenics panes of the LM, indicates total oxidizer reserves on board the spacecraft which are required in addition to helium and hydrazine to provide fuel for the service propulsion system.

Oxidizer Low

This indicator warns the crew of low oxidizer gases which are used for the command module's main engine propellant.

Panel CSM 1, Panel CSM 2, Panel CSM 3

These buttons allow the crew to switch to other command service module instrument panels, which also include the lunar module when it is docked.

Panel LM 1, Panel LM 2, Panel LM 3

These buttons allow the crew to switch to other lunar module instrument panels, which also include the command module when it is docked.

Penumbra

Semi-dark portion of a shadow in which light is partly cut off, e.g. surface of Moon or Earth away from Sun where the disc of the Sun is only partly obscured.

Percynthion

Point nearest Moon of object in lunar orbit. Object having been launched from body other than Moon.

Pengée

Point at which a Moon or an artificial satellite in its orbit is closest to the Earth.

Periune

The point at which a satellite (e.g. a

spacecraft) in its orbit is closest to the Moon. Differs from pericynthion in that the orbit is Moon-originated.

PGNS

This button activates the primary guidance and navigation system, and receives celestial data from the inertia measuring unit.

Pitch

The movement of a space vehicle about an axis (Y) that is perpendicular to its longitudinal axis.

Pitch Rate

This indicator allows the pilot to control and read the vehicle pitch rate. Located in both the CSM and LM.

Prime Computer

This button turns on and off the primary spacecraft computers. Located in both the CSM and LM.

Prime Radio

This indicator warns the crew that the primary radio system has failed.

Pyro Arm

This button arms explosive charges which are employed to open parachutes, jettison the S4-B stage, service propulsion system and the lunar module. This system must be turned on before jettison can occur.

Quad Forward/Reverse

This button activates all forward and reverse thrusters on the command and lunar modules.

Quad Port

This button activates all port (left) reaction control thrusters on the command and lunar modules.

Quad Starboard

This button activates all starboard reaction control thrusters on the command and lunar modules.

Radar

This button activates the spacecraft radar systems. Located in both the CSM and LM.

Radar Fail

This indicator warns the crew of a radar system malfunction. Located in both the CSM and LM.

Radar Systems

Located in the flight systems panel, this button turns on all command service module radar transmitters and receivers. It also sends data to the primary and back-up computers.

Radio Fail

This indicator warns the crew that the lunar module radio system has failed.

Radio System

This button activates all primary and secondary communication systems. Located in both the CSM and LM.

RCS (Reaction Control System)

This button is used to enable the lunar module's reaction control systems. The RCS is used for attitude adjustment and small course corrections.

RCS Fail

This indicator alerts the crew to a serious malfunction with the reaction control system. Located in both the CSM and LM.

RCS Flow

This button activates the reaction control system and allows fuel to be used.

RCS Fuel

This gauge indicates the total fuel status of the service propulsion system for the reaction control system jets. Located in both the CSM and LM, this gauge indicates fuel status during the decent and ascent stage.

RCS Tank

This button opens the RCS tank fuel valve

RCS Tie-line

When this button is engaged, it allows the pilot to combine total ascent and descent RCS fuel supplies

Reentry

The return of a spacecraft that reenters the atmosphere after flight above it

Retrorocket

A rocket that gives thrust in a direction opposite to the direction of the object's motion

Right Ascension

Angular measurement of a body eastward along the celestial equator from the vernal equinox (0 degrees RA) to the hour circle of the body. Corresponds roughly to Earth surface longitude, except as expressed in hrs.min.sec. instead of 180 degrees west and east from 0 degrees (24 hours = 360 degrees)

Roll

The movements of a space vehicle about its longitudinal (X) axis

Roll Rate

This indicator allows the pilot to control and read the vehicle roll rate. Located in both the CSM and LM

S-1C Fuel

This gauge indicates total fuel status of the first stage of the Saturn rocket

S-1C Jettison

This button is used to jettison the first stage of the Saturn rocket during launch

S-2 Fuel

This gauge indicates total fuel status of the second stage of the Saturn rocket

S-2 Jettison

This button is used to jettison the second stage of the Saturn rocket during launch

S-4B Fuel

This gauge indicates total fuel status of the third stage of the Saturn rocket

S-4B Jettison

This button is used to jettison the third stage of the Saturn rocket during launch

Saturn S1 S2 S4

This button starts the ignition sequence of the Saturn 5 rocket system

Saturn Engine Status

These five circular engine indicators are used during liftoff. They give current status of engine conditions by indicating red or green

S-Band

A radio frequency band of 1.550 to 5.200 megahertz

S-Band System

This button activates the lunar module S-band radio system

SCS

This button activates the stabilization control system, which acts as a pitch, roll, and yaw autopilot. Located in both the CSM and LM

SCS Fail

This indicator warns the crew that the stabilization control system has failed

Second Radio

This indicator warns the crew that the secondary radio system has failed

Selenocentric

Adjective referring to orbit having Moon as center

Selenographic

Adjective relating to physical geography of Moon. Specifically,

position on lunar surface as measured in altitude from lunar equator and in longitude from a reference lunar meridian

SPS JET (Service Propulsion System Jettison)

This button activates the jettison device which releases the command module from the service propulsion system. This is done before reentry

Set Gimbal

This indicator locks the main engine nozzle coordinates into the computer allowing precise engine thrust to occur. Located in both the CSM and LM

Sidereal

Adjective relating to measurement of time, position or angle in relation to the celestial sphere and the vernal equinox

Signal Indicator

This indicator tells the crew whether they have acquisition or loss of signal with mission control

Slope

The slope indicator is located below the velocity display screen. When activated, this button gives the pilot either a green or red flashing indication which relates to the correct or incorrect slope angle

SPS Breaker

This button controls main electrical current to the service propulsion system and its supporting hardware

SPS Data (Service Propulsion System Data)

This button displays all operational data related to the service propulsion system

SPS Fuel

This gauge indicates total fuel status of the service propulsion system

Stage Ignition

This indicator located in the Saturn engine status panel, gives the pilot ignition status during liftoff and staging events

Star Finder

This button activates the star finder navigation system. By utilizing a pre-coded star map, the crew can realign their trajectory after a serious IMU error

State Vector

Ground-generated spacecraft position, velocity and timing information uploaded to the spacecraft computer for crew use as a navigational reference

System Fire

This indicator alerts the crew that there is smoke or a fire somewhere on the vehicle. Located in both the CSM and LM

Tank Heater

This button turns on the tank heating element which prevents water and various gasses from freezing

Tank Stir

This button activates a mechanical stirring device which works in conjunction with the electrical heater to prevent tank freezing. On the CSM, there are two tanks, A and B, that are stirred

Target Rates

This button displays the target rates for the command module or the lunar module. It works in conjunction with the radar system and helps the pilot locate the docking vehicle

Telemetry

A system for taking measurements with an aerospace vehicle in flight and transmitting them by radio to a ground station

Telemetry Fail

This indicator warns the crew that all telemetry transmission to mission control has failed. Located in both the CSM and LM.

Terminator

Separation line between lighted and dark portions of celestial body which is not self luminous.

Thrust

This controllable indicator allows the pilot to adjust primary engine thrust. It also indicates current thrust status. Located in both the CSM and LM.

Thrust Duration

This controllable device is used to set engine burn times and also acts as a master velocity warning indicator. Located in both the CSM and LM.

Trajectory Display

This display indicates the lunar module trajectory while in the descent and ascent corridor. It gives the pilot an indication of correct trajectory perimeters.

Ullage

The volume in a closed tank or container that is not occupied by the stored liquid; the ratio of this volume to the total volume of the tank, also an acceleration to force propellants into the engine pump intake lines before ignition.

Umbra

Darkest part of a shadow in which light is completely absent, e.g. surface of Moon or Earth away from Sun where the disc of the Sun is completely obscured.

Under Volt

This indicator alerts the crew to electrical problems. Located in both the CSM and LM.

Update

This button updates the primary and back-up computers with new mission

control S-band data. This button also downloads spacecraft system data to mission control.

Up Link Data

Information fed by radio signal from the ground to a spacecraft.

Velocity

This indicator allows the pilot to read the relative velocity and closure rates of the space vehicle. Located in both the CSM and LM.

Velocity Display

This display indicates the spacecraft perimeters while in the stoof corridor. It also gives the pilot an indication of the vehicle entry corridor when returning to Earth.

Velocity Warning Indicator

This status display is used to warn the pilot of excessive G force loads on the space vehicle during launch and entry.

Water Pack/Beacon

This button activates all flotation devices which are used to keep the command module afloat after splashdown.

This button also activates the emergency radio beacon, which is used after a splashdown to allow recovery forces to easily locate the space capsule.

Yaw

Angular displacement of a space vehicle about its vertical (Z) axis.

Yaw Rate

This indicator allows the pilot to control and read the vehicle yaw rate. Located in both the CSM and LM.

LAUNCH SIMULATION

SECTION 1-1
JSC LUNAR GENERIC, REV K 3/15/73

LAUNCH
TRAINING

TRAINING

FLIGHT PLAN

BLOCK 1 LAUNCH

ITEM 001 **BLOCK 1: RADIO FREQUENCY SETTINGS**

STEP 1 SWITCH TO PANEL CSM 3
STEP 2 SET PRIMARY FREQUENCY
STEP 3 SET PRIMARY CHANNEL

ITEM 002 **BLOCK 1: RADIO FREQUENCY SETTINGS**

STEP 1 SET SECONDARY FREQUENCY
STEP 2 SET SECONDARY CHANNEL
STEP 3 VOICE CHECK

ITEM 003 **BLOCK 1: COMMAND MODULE SYSTEM**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 CSM SYSTEM ON
STEP 3 DATA DISPLAY ON
STEP 4 COMPUTER DISPLAY ON

ITEM 004 **BLOCK 1: INERTIAL MEASUREMENT UNIT**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 IMU ON

ITEM 005 **BLOCK 1: PRIME COMPUTER**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 PRIME COMP ON
STEP 3 CHECK COMPUTER DISPLAY READOUT

ITEM 006 **BLOCK 1: GUIDANCE NAVIGATION CONTROL**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 GNCS ON
STEP 3 CHECK GNCS RATES DISPLAY READOUT

TRAINING

FLIGHT PLAN

BLOCK 1 LAUNCH

ITEM 007 BLOCK 1: FUEL CELL ACTIVATION

STEP 1 SWITCH TO PANEL CSM 3
STEP 2 FUEL CELL-1 ON
STEP 3 FUEL CELL-2 ON
STEP 4 FUEL CELL 3 ON
STEP 5 CHECK ALL FUEL CELL GAUGES

ITEM 008 BLOCK 1: FUEL FLOW ON

STEP 1 SWITCH TO PANEL CSM 3
STEP 2 FUEL FLOW ON
STEP 3 SWITCH TO CSM 1 CHECK FUEL GAUGE

ITEM 009 BLOCK 1: OXIDIZER FLOW ON

STEP 1 SWITCH TO PANEL CSM 3
STEP 2 OXID FLOW ON
STEP 3 CHECK OXID GAUGE

ITEM 010 BLOCK 1: MAIN PUMP ON

STEP 1 SWITCH TO PANEL CSM 3
STEP 2 MAIN PLMP ON

ITEM 011 BLOCK 1: HYDROGEN FLOW ON

STEP 1 SWITCH TO PANEL CSM 3
STEP 2 HYDRO FLOW ON
STEP 3 CHECK HYDRO GAUGE





ITEM 012 BLOCK 1: INVERTER ON

STEP 1 SWITCH TO PANEL CSM 3
STEP 2 INVERTER ON

TRAINING

FLIGHT PLAN

BLOCK 1 LAUNCH

ITEM 013	BLOCK 1: BATTERIES A, B, C ON
	STEP 1 SWITCH TO PANEL CSM 3 STEP 2 BATTERY A,B C ON STEP 3 CHECK GAUGES BATT A,B,C
ITEM 014	BLOCK 1: OXYGEN FLOW
	STEP 1 SWITCH TO PANEL CSM 3 STEP 2 O-2 FLOW ON STEP 3 CHECK O-2 GAUGE
ITEM: 015	BLOCK 1: BACK-UP COMPUTER ON
	STEP 1 SWITCH TO PANEL CSM 2 STEP 2 BACK UP COMPUTER ON STEP 3 CHECK COMPUTER STATUS CSM 2
ITEM- 016	BLOCK 1: MAIN, A, C ELEC. BUS ON
	STEP 1 SWITCH TO PANEL CSM 3 STEP 2 MAIN BUS ON STEP 3 A BUS ON STEP 4 C BUS ON STEP 5 CHECK AMPS GAUGE STEP 6 CHECK AC GAUGE STEP 7 SWITCH TO CSM 2 CHECK SPS D SPLAY

NOTE: B BUS CIRCUITS DEFAULTED ON LAUNCH
 PAD POWER IS CONNECTED UNTIL ITEM 22,
 EVENT IS COMPLETED


LAUNCH WILL AUTO ABORT AT T MIN. S 5 SEC IF CSM
 IS NOT CONFIGURED PROPERLY

TRAINING

FLIGHT PLAN

BLOCK 1 LAUNCH


ITEM: 019 BLOCK 1: ENTER GIMBAL RATES

- 
- STEP 1 SWITCH TO PANEL CSM 2
 - STEP 2 SWITCH DISPLAY TO GIMBAL RATES
 - STEP 3 ENTER X RATE DATA
 - STEP 4 ENTER Y RATE DATA
 - STEP 5 CHECK GIMBAL RATES CSM 2 DISPLAY

ITEM 020 BLOCK 1: SET GIMBAL

- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 SET GIMBAL ON

ITEM 021 BLOCK 1: MAIN BREAKER CLOSED

- 
- STEP 1 SWITCH TO PANEL CSM 3
 - STEP 2 MAIN BREAKER ON
 - STEP 3 CHECK AC & DC GAUGES

ITEM 022 BLOCK 1: INTERNAL POWER SWITCH

- 
- STEP 1 SWITCH TO PANEL CSM 2
 - STEP 2 INT POWER ON
 - STEP 3 SWITCH TO CSM 3
 - STEP 4 CHECK AC, DC & FUEL CELL 1,2,3 GAUGES

ITEM 023 BLOCK 1: CAUTION AND WARNING ON

- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 CAUTION/WARNING ON

ITEM 024 BLOCK 1: SATURN S1, S2, S4B ON

- 
- STEP 1 SWITCH TO PANEL CSM 1
 - STEP 2 SATURN S1, S2, S4B ON

TRAINING

FLIGHT PLAN

BLOCK 1 LAUNCH

ITEM: 025 **BLOCK 1: MASTER ARM ON**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 MASTER ENGINE ARM ON

ITEM 026 **BLOCK 1: LAUNCH ESCAPE ARM**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SAFETY OPEN
STEP 3 ARM ABORT SYSTEM

ITEM: 027 **BLOCK 1: AUTO SEQUENCE START**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 AUTO SEQUENCE ON

ITEM 028 **BLOCK 1: S-1C JETT**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 S-1C JETT ON

ITEM: 029 **BLOCK 1: LAUNCH ESCAPE JETTISON**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 LES JETT ON

ITEM 030 **BLOCK 1: S-2 JETT**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 S-2 JETT ON

LM DOCKING / TLI SIMULATION

SECTION 2-1

JSC LUNAR GENERIC, REV K 3/15/73

LM DOCK
TRAINING

TRAINING

FLIGHT PLAN

BLOCK 2 TLI

ITEM 031 BLOCK 2: DEPLOY ANTENNA MAST



- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 DEPLOY ANTENNA MAST (OMNI)
- STEP 3 SWITCH TO CSM 3
- STEP 4 CHECK PRIMARY & SECONDARY FREQ

CHECK UPDATES FOR ANTENNA DIRECTION BRAVO OMNI

ITEM 032 BLOCK 2: TLI ENGINE GIMBAL RATES



- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 SWITCH DISPLAY TO GIMBAL RATES
- STEP 3 ENTER X-RATE DATA
- STEP 4 ENTER Y-RATE DATA
- STEP 5 CHECK GNCS RATES DISPLAY

ITEM 033 BLOCK 2: SET GIMBAL DATA

- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 SET GIMBAL ON

ITEM: 034 BLOCK 2: MASTER ARM ON

- STEP 1 SWITCH TO PANEL CSM 1
- STEP 2 MASTER ENGINE ARM ON

ITEM 035 BLOCK 2: SET THRUST DURATION

- STEP 1 SWITCH TO PANEL CSM 1
- STEP 2 SET THRUST DURATION

TRAINING

FLIGHT PLAN

BLOCK 2 TLI

ITEM: 036 **BLOCK 2: SET ENGINE POWER**

STEP 1 SWITCH TO PANEL CSM 1

STEP 2 SET ENGINE THRUST

ITEM: 037 **BLOCK 2: ARM S-4B**

STEP 1 SWITCH TO PANEL CSM 1

STEP 2 ARM S-4B

ITEM: 038 **BLOCK 2: INITIATE AUTO SEQUENCE**

STEP 1 SWITCH TO PANEL CSM 1

STEP 2 AUTO SEQUENCE ON

ITEM: 042 **BLOCK 2: ENABLE MAIN PUMP**

STEP 1 SWITCH TO PANEL CSM 3

STEP 2 SWITCH MAIN PUMP ON

ITEM: 043 **BLOCK 2: ENABLE FUEL FLOW**

STEP 1 SWITCH TO PANEL CSM 3

STEP 2 SWITCH FUEL FLOW ON

STEP 3 CHECK ALL FUEL GAUGES

ITEM: 044 **BLOCK 2: ENABLE RADAR SYSTEM**

STEP 1 SWITCH TO PANEL CSM 2

STEP 2 SWITCH ON RADAR SYSTEM

STEP 3 SWITCH TO CSM 2 RADAR DISPLAY

STEP 4 ACQUIRE S4-B TARGET

TRAINING

FLIGHT PLAN

BLOCK 2 TLI

ITEM 045

BLOCK 2: PYRO ARM S4-B

- STEP 1 SWITCH TO PANEL CSM 2
STEP 2 OPEN SAFETY SHIELD
STEP 3 PYRO ARM ON

ITEM 046

BLOCK 2: S4-B JETTISON

- STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SWITCH S4-B JETT ON
STEP 3 SWITCH TO PANEL CSM 2
STEP 4 SWITCH ON EXT CAM
STEP 5 CHECK FOR GOOD S4-B JETT SON

ITEM 047

BLOCK 2: ARM CSM RCS

- STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SWITCH ON CSM RCS

ITEM: 048

BLOCK 2: ALIGN SIGHT ENABLE

- STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SWITCH ON ALIGN SIGHT
STEP 3 CHECK DISPLAY FOR RADICAL ON

ITEM 049

BLOCK 2: AUTO SWITCH TO CSM 4

- STEP 1 USE AUX CONTROL (MOUSE)
STEP 2 USE JOYSTICK CONTROLLER FOR DOCK
STEP 3 CHECK DISPLAY FOR LM TARGET RATES

NOTE: WHEN ALIGN SIGHT IS DEPRESSED CSM COMPUTER AUTO SWITCHES TO COAS FOR LM DOCKING

TRAINING

FLIGHT PLAN

BLOCK 2 TLI

ITEM 050 BLOCK 2: ARM JOYSTICK CONTROLLER



- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 ARM JOYSTICK ON
- STEP 3 CHECK HAND CONTROLLER STATUS
- STEP 4 SELECT CSM 3 CHECK OLDS

ITEM 051 BLOCK 2: ARM SPS ENGINE



- STEP 1 SWITCH TO PANEL CSM 1
- STEP 2 SWITCH ON MAIN SPS
- STEP 3 CHECK ENGINE IGNITION STATUS

ITEM 053 BLOCK 2: ENTER GIMBAL RATES



- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 SWITCH ON NPLT AND GIMBAL RATES
- STEP 3 ENTER GIMBAL RATES

ITEM 054 BLOCK 2: SET GIMBAL RATE



- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 SELECT SET GIMBAL BUTTON
- STEP 3 SELECT GIMBAL RATES CHECK DISPLAY

ITEM 055 BLOCK 2: STABILIZATION CONTROL



- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 SCS ON
- STEP 3 CHECK SPS DATA DISPLAY

TRAINING

FLIGHT PLAN

BLOCK 2 TLI

ITEM 056 **BLOCK 2: ENGINE HEATER**

11-11-72

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SPS ENGINE HEATER ON
STEP 3 CHECK SPS DATA DISPLAY

ITEM 057 **BLOCK 2: TANK HEATER**

STEP 1 SWITCH TO PANEL CSM 3
STEP 2 TANK HEATER ON
STEP 3 SWITCH TO CSM 2
STEP 4 CHECK SPS DATA DISPLAY

ITEM 058 **BLOCK 2: MASTER ARM ON**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 MASTER ENGINE ARM ON

ITEM 059 **BLOCK 2: SET THRUST DURATION**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET THRUST DURATION

ITEM: 059a **BLOCK 2: SET THRUST PERCENT**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET THRUST PERCENT

ITEM 060 **BLOCK 2: SET ENGINE POWER**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET ENGINE THRUST

ITEM 061 **BLOCK 2: INITIATE AUTO SEQUENCE**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 AUTO SEQUENCE ON

LM POWERUP / LUNAR LANDING SIMULATION

SECTION 3-1

JSC LUNAR GENERIC, REV K 3/15/73

TRAINING

FLIGHT PLAN

BLOCK 3 LM POWERUP & LOI

ITEM 062 BLOCK 3: LM HATCH OPEN

EP 1 SWITCH TO PANEL CSM 3
STEP 2 PANEL LM 1 ON

ITEM 063 BLOCK 3: RADIO FREQUENCY SETTINGS

STEP 1 SWITCH TO PANEL LM 3
STEP 2 RADIO SYSTEM ON
STEP 3 SET PRIMARY FREQUENCY
STEP 4 SET PRIMARY CHANNEL

ITEM 064 BLOCK 3: RADIO FREQUENCY SETTINGS

STEP 1 SET SECONDARY FREQUENCY
STEP 2 SET SECONDARY CHANNEL
STEP 3 VOICE CHECK

ITEM 065 BLOCK 3: LUNAR MODULE SYSTEM

STEP 1 SWITCH TO PANEL LM 3
STEP 2 LM SYSTEM ON

ITEM 065a BLOCK 3: LM CABIN PRESSURE ON

STEP 1 SWITCH TO PANEL LM 2
STEP 2 CABIN PRESSURE ON

ITEM 066 BLOCK 3: PRIME & BACK-UP COMPUTER

STEP 1 SWITCH TO PANEL LM 2
STEP 2 PRIME COMP ON
STEP 3 BACK-UP COMPUTER ON
STEP 4 SWITCH TO LM 3
STEP 5 CHECK COMPUTER DISPLAY READOUT

TRAINING

FLIGHT PLAN

BLOCK 3 LM POWERUP & LOI

ITEM 067 BLOCK 3: MAIN BREAKER CLOSED

STEP 1 SWITCH TO PANEL LM 3
STEP 2 MAIN BREAKER ON
STEP 3 CHECK ELECTRICAL STATUS GAUGES

ITEM 068 BLOCK 3: ENVIRONMENTAL CONTROL

STEP 1 SWITCH TO PANEL LM 2
STEP 2 EGS ON
STEP 3 CHECK CRYOGENICS GAUGES

ITEM 069 BLOCK 3: INERTIAL MEASUREMENT UNIT

STEP 1 SWITCH TO PANEL LM 2
STEP 2 IML ON

ITEM 070 BLOCK 3: CAUTION AND WARNING ON

STEP 1 SWITCH TO PANEL LM 3
STEP 2 CAUTION/WARNING ON

ITEM 071 BLOCK 3: GUIDANCE & NAVIGATION

STEP 1 SWITCH TO PANEL LM 3
STEP 2 GUIDANCE & NAVIGATION ON

ITEM 072 BLOCK 3: ENTER GIMBAL RATES

STEP 1 SWITCH TO PANEL LM 3
STEP 2 SWITCH ON INPLT
STEP 3 ENTER GIMBAL RATES

TRAINING

FLIGHT PLAN BLOCK 3 LM POWERUP & LOI


ITEM 073

BLOCK 3: SET GIMBAL RATE

- 
- STEP 1 SWITCH TO PANEL LM 2
 - STEP 2 SET GIMBAL ON
 - STEP 3 SWITCH TO LM 3
 - STEP 4 SELECT GIMBAL RATES CHECK DISPLAY


ITEM 074

BLOCK 3: SWITCH TO CSM

- 
- STEP 1 SWITCH TO PANEL LM 3
 - STEP 2 SWITCH TO PANEL CSM


ITEM 075

BLOCK 3: SET THRUST DURATION

- 
- STEP 1 SWITCH TO PANEL CSM 1
 - STEP 2 SET THRUST DURATION


ITEM 076

BLOCK 3: SET ENGINE POWER

- 
- STEP 1 SWITCH TO PANEL CSM 1
 - STEP 2 SET ENGINE THRUST

ITEM 077

BLOCK 3: ARM SPS ENGINE

- 
- STEP 1 SWITCH TO PANEL CSM 1
 - STEP 2 SWITCH ON MAIN SPS
 - STEP 3 CHECK COMPUTER IGNITION STATUS

NOTE: IF RECEIVING POOR MCC RADIO TRANSMISSIONS REFER TO FLIGHT PLAN TO ACTIVATE LUNAR MODULE SYSTEMS

TRAINING

FLIGHT PLAN **BLOCK 3 LM POWERUP & LOI****ITEM 078 BLOCK 3: ENTER GIMBAL RATES**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SWITCH ON NPLT
STEP 3 ENTER GIMBAL RATES

ITEM 079 BLOCK 3: SET GIMBAL RATE

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SET GIMBAL ON

ITEM 080 BLOCK 3: MASTER ARM ON

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 MASTER ENGINE ARM ON

ITEM 081 BLOCK 3: INITIATE AUTO SEQUENCE

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 AUTO SEQUENCE ON

ITEM 082 BLOCK 3: LM BATTERY ACTIVATION

STEP 1 SWITCH TO PANEL LM 3
STEP 2 BATTERY A ON
STEP 3 BATTERY B ON
STEP 4 BATTERY C ON
STEP 5 CHECK BATT A, B, & C GAUGES

NOTE: LM BATTERY POWER SHOULD BE CONSERVED. USE ONLY ESSENTIAL FLIGHT EQUIPMENT. POWER DOWN ALL SYSTEMS AND HEATERS THAT ARE NOT IN USE OR CRITICAL FOR LIFE SUPPORT.

TRAINING

FLIGHT PLAN BLOCK 3 LM POWERUP & LOI

ITEM 083 BLOCK 3: LM FUEL SYSTEM ON

STEP 1 SWITCH TO PANEL LM 3
STEP 2 FUEL SYSTEM ON
STEP 3 ENGINE HEATER ON

ITEM. 084 BLOCK 3: LM OXIDIZER FLOW ON

STEP 1 SWITCH TO PANEL LM 3
STEP 2 OXIDIZER FLOW ON
STEP 3 SELECT LM 2
STEP 4 CHECK OX D GAUGE

ITEM 084a BLOCK 3: LM HYDROGEN FLOW ON

STEP 1 SWITCH TO PANEL LM 2
STEP 2 HYDRO FLOW ON
STEP 3 SELECT LM 3
STEP 4 CHECK HYDRO GAUGE

ITEM. 085 BLOCK 3: DESCENT & RCS TANKS

STEP 1 SWITCH TO PANEL LM 2
STEP 2 DESCENT TANK OPEN
STEP 3 RCS TANK OPEN
STEP 4 SELECT LM 1
STEP 5 CHECK DESCENT & RCS GAUGES

NOTE: DO NOT PRE ACTIVATE LM SYSTEMS BEFORE MCC
TRANSMISSION CALLS
PREMATURE SYSTEM OR EQUIPMENT START UP MAY
CAUSE MISSION FAILURE

**TRAINING
FLIGHT PLAN****BLOCK 4
LUNAR ORBIT & LANDING****ITEM: 087 BLOCK 4: ARM SPS ENGINE**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SWITCH ON MAIN SPS
STEP 3 CHECK COMPUTER IGNITION STATUS

ITEM 088 BLOCK 4: ENTER GIMBAL RATES

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SWITCH ON INPUT
STEP 3 ENTER GIMBAL RATES

ITEM 089 BLOCK 4: SET GIMBAL RATE

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SET GIMBAL ON

ITEM 090 BLOCK 4: SET THRUST DURATION

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET THRUST DURATION

ITEM: 091 BLOCK 4: SET ENGINE POWER

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET ENGINE THRUST

NOTE: ENGINE THRUST AND BURN DURATION SETTINGS MUST BE ACCURATE. ANY DEVIATION MAY CAUSE MISS OR FAILURE.

**TRAINING
FLIGHT PLAN****BLOCK 4
LUNAR ORBIT & LANDING****ITEM 092 BLOCK 4: MASTER ARM / AUTO SEQ. ON**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 MASTER ARM ON
STEP 3 AUTO SEQUENCE ON

ITEM 093 BLOCK 4: LM RADAR ON

STEP 1 SWITCH TO PANEL LM 2
STEP 2 RADAR ON

ITEM 094 BLOCK 4: LM FUEL PUMP

STEP 1 SWITCH TO PANEL LM 2
STEP 2 FUEL PUMP ON

ITEM 095 BLOCK 4: RCS ARM

STEP 1 SWITCH TO PANEL LM 1
STEP 2 RCS ON

ITEM 096 BLOCK 4: DESCENT STAGE ARM

STEP 1 SWITCH TO PANEL LM 1
STEP 2 DESCENT STAGE ON

ITEM 097 BLOCK 4: MASTER ARM ON

STEP 1 SWITCH TO PANEL LM 1
STEP 2 MASTER ENGINE ARM ON

TRAINING FLIGHT PLAN

BLOCK 4 LUNAR ORBIT & LANDING

ITEM: 098 BLOCK 4: INITIATE AUTO SEQUENCE

STEP 1 SWITCH TO PANEL LM 1
STEP 2 AUTO SEQUENCE ON

ITEM: 099 BLOCK 4: ENGINE BREAKER ON

STEP 1 SWITCH TO PANEL LM 3
STEP 2 ENGINE BREAKER ON

ITEM 100 BLOCK 4: ARM JOYSTICK

STEP 1 SWITCH TO PANEL LM 2
STEP 2 ARM JOYSTICK

ITEM 101 BLOCK 4: HATCH CLOSED DOCK OFF

STEP 1 SWITCH TO PANEL LM 2
STEP 2 HATCH CLOSED (SWITCH ON)
STEP 3 DOCK OFF (UNDOCK)

ITEM 102 BLOCK 4: QUAD PORT STARB ON

STEP 1 SWITCH TO PANEL LM 3
STEP 2 QUAD PORT ON
STEP 3 QUAD STARB ON

ITEM 103 BLOCK 4: QUAD FWD / REV ON

STEP 1 SWITCH TO PANEL LM 3
STEP 2 QUAD FWD / REV ON

ITEM: 104 BLOCK 4: GEAR LOCK ON

STEP 1 SWITCH TO PANEL LM 2
STEP 2 LANDING GEAR LOCK

**TRAINING
FLIGHT PLAN****BLOCK 4
LUNAR ORBIT & LANDING**

ITEM: 105	BLOCK 4: ABORT ARM ON STEP 1 SWITCH TO PANEL LM 1 STEP 2 ABORT ARM ON
ITEM 106	BLOCK 4: PNGS ON STEP 1 SWITCH TO PANEL LM 3 STEP 2 PNGS ON
ITEM 107	BLOCK 4: HIGH BAND RADAR ON STEP 1 SWITCH TO PANEL LM 2 STEP 2 RADAR ON
ITEM 108	BLOCK 4: AGS ON STEP 1 SWITCH TO PANEL LM 3 STEP 2 AGS ON
ITEM: 109	BLOCK 4: MASTER ARM OFF / RCS OFF STEP 1 SWITCH TO PANEL LM 1 STEP 2 MASTER ARM OFF STEP 3 RCS OFF

Check all electrical gauges and cryo tank pressures before beginning EVA procedures

USE LANDING CUE CARD FOR VEHICLE SAFE PROCEDURES

Notify MCC regarding any anomalies

LUNAR LIFTOFF/DOCKING SIMULATION

SECTION 4-1

JSC LUNAR GENERIC, REV K 3/15/73

**TRAINING
FLIGHT PLAN****BLOCK 6
LUNAR LIFTOFF & DOCKING****ITEM 125 BLOCK 6: ASCENT TANK OPEN**

STEP 1 SWITCH TO PANEL LM 2
STEP 2 ASCENT TANK OPEN

ITEM 126 BLOCK 6: FUEL PUMP ON

STEP 1 SWITCH TO PANEL LM 2
STEP 2 FUEL PUMP ON

ITEM 127 BLOCK 6: ASCENT ENGINE / RCS ON

STEP 1 SWITCH TO PANEL LM 1
STEP 2 ASCENT ENGINE ARM
STEP 3 RCS ON

ITEM 128 BLOCK 6: ENTER GIMBAL RATES

STEP 1 SWITCH TO PANEL LM 3
STEP 2 SWITCH ON INPUT
STEP 3 ENTER GIMBAL RATES

ITEM 129 BLOCK 6: SET GIMBAL RATE

STEP 1 SWITCH TO PANEL LM 2
STEP 2 SET GIMBAL ON

ITEM 130 BLOCK 6: ARM JOYSTICK

STEP 1 SWITCH TO PANEL LM 2
STEP 2 ARM JOYSTICK

ITEM 131 BLOCK 6: QUAD PORT ON

STEP 1 SWITCH TO PANEL LM 3
STEP 2 QUAD PORT ON

**TRAINING
FLIGHT PLAN****BLOCK 6
LUNAR LIFTOFF & DOCKING****ITEM 132 BLOCK 6: QUAD STARB ON**

STEP 1 SWITCH TO PANEL LM 3

STEP 2 QUAD STARB ON

ITEM: 133 BLOCK 6: QUAD FWD / REV ON

STEP 1 SWITCH TO PANEL LM 3

STEP 2 QUAD FWD / REV ON

ITEM 134 BLOCK 6: OXIDIZER FLOW ON

STEP 1 SWITCH TO PANEL LM 3

STEP 2 OXID FLOW ON

ITEM 135 BLOCK 6: HYDROGEN FLOW ON

STEP 1 SWITCH TO PANEL LM 3

STEP 2 HYDROGEN FLOW ON

ITEM 136 BLOCK 6: SET THRUST DURATION

STEP 1 SWITCH TO PANEL LM 1

STEP 2 SET THRUST DURATION

ITEM 137 BLOCK 6: SET ENGINE PERCENT

STEP 1 SWITCH TO PANEL LM 1

STEP 2 SET ENGINE THRUST

ITEM 138 BLOCK 6: MASTER ARM ON

STEP 1 SWITCH TO PANEL LM 1

STEP 2 MASTER ENGINE ARM ON

TRAINING**FLIGHT PLAN****BLOCK 6
LUNAR LIFTOFF & DOCKING****ITEM 139 BLOCK 6: INITIATE AUTO SEQUENCE**

STEP 1 SWITCH TO PANEL LM 1
STEP 2 AUTO SEQUENCE ON

ITEM 140 BLOCK 6: PNGS ON

STEP 1 SWITCH TO PANEL LM 3
STEP 2 PNGS ON

ITEM 141 BLOCK 6: LM RADAR ON

STEP 1 SWITCH TO PANEL LM 2
STEP 2 RADAR ON

ITEM 142 BLOCK 6: TARGET RATES ON

STEP 1 SWITCH TO PANEL LM 3
STEP 2 TARGET RATES ON

ITEM 143 BLOCK 6: LOW BAND RADAR ON

STEP 1 SWITCH TO PANEL LM 2
STEP 2 LOW BAND ON

ITEM 144 BLOCK 6: LM AUTO PILOT ON

STEP 1 SWITCH TO PANEL LM 3
STEP 2 AUTO PILOT ON

ITEM 145 BLOCK 6: LM ALIGN SIGHT ON

STEP 1 SWITCH TO PANEL LM 2
STEP 2 ALIGN SIGHT ON

TRAINING FLIGHT PLAN

BLOCK 6 LUNAR LIFTOFF & DOCKING

ITEM. 146	BLOCK 6: ADJUST CABIN PRESSURE
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<p>STEP 1 SWITCH TO PANEL LM 2</p> <p>STEP 2 DEPRESS CABIN PRESSURE</p>

ITEM. 147	BLOCK 6: SWITCH TO CSM
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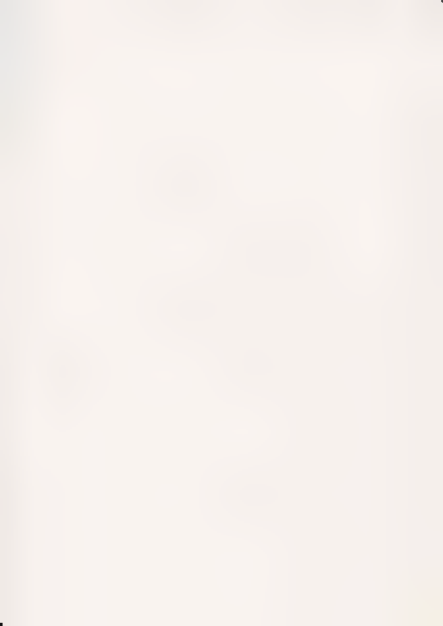
<p>STEP 1 SWITCH TO PANEL LM 3</p> <p>STEP 2 DEPRESS PANEL CSM</p>

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REENTRY SIMULATION

SECTION 5-1

JSC LUNAR GENERIC, REV K 3/15/73



TRAINING

FLIGHT PLAN

BLOCK 7 TEI & REENTRY

ITEM 148 **BLOCK 7: SWITCH TO CSM**

STEP 1 SWITCH TO PANEL LM 3
STEP 2 CSM ON

ITEM: 149 **BLOCK 7: PYRO ARM**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 OPEN SAFETY COVER
STEP 3 PYRO ARM ON

ITEM 150 **BLOCK 7: ENTER GIMBAL RATES**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SWITCH ON INPUT
STEP 3 ENTER GIMBAL RATES
STEP 4 CHECK GIMBAL RATES

ITEM 151 **BLOCK 7: SET GIMBAL RATE**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SET GIMBAL ON

ITEM 152 **BLOCK 7: ARM SPS ENGINE**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 ARM MAIN SPS

ITEM 153 **BLOCK 7: ARM CSM RCS**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 ARM CSM RCS

ITEM, 154 **BLOCK 7: ENABLE MAIN PUMP**

STEP 1 SWITCH TO PANEL CSM 3
STEP 2 MAIN PUMP ON

TRAINING

FLIGHT PLAN

BLOCK 7 TEI & REENTRY

ITEM 155 BLOCK 7: MASTER ARM

STEP 1 SWITCH TO PANEL CSM 1

STEP 2 MASTER ARM ON

ITEM 156 BLOCK 7: SET THRUST DURATION

STEP 1 SWITCH TO PANEL CSM 1

STEP 2 SET THRUST DURATION

ITEM 157 BLOCK 7: SET ENGINE POWER

STEP 1 SWITCH TO PANEL CSM 1

STEP 2 SET ENGINE THRUST

ITEM: 158 BLOCK 7: INITIATE AUTO SEQUENCE

STEP 1 SWITCH TO PANEL CSM 1

STEP 2 AUTO SEQUENCE ON

ITEM: 159 BLOCK 7: LM JETT

STEP 1 SWITCH TO PANEL CSM 2

STEP 2 OPEN SAFETY COVER

STEP 3 LM JETT ON

ITEM 160 BLOCK 7: A TANK & B TANK STIR

STEP 1 SWITCH TO PANEL CSM 3

STEP 2 A TANK STIR

STEP 3 B TANK STIR

ITEM 161 BLOCK 7: H 2-O STIR

STEP 1 SWITCH TO PANEL CSM 3

STEP 2 H 2 O STIR ON

TRAINING**FLIGHT PLAN****BLOCK 7 TEI & REENTRY****ITEM 162 BLOCK 7: ENTER GIMBAL RATES**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SWITCH ON INPJT
STEP 3 ENTER GIMBAL RATES
STEP 4 CHECK GIMBAL RATES

ITEM 163 BLOCK 7: SET GIMBAL RATE

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SET GIMBAL ON

ITEM 164 BLOCK 7: SET THRUST DURATION

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET THRUST DURATION

ITEM 165 BLOCK 7: SET ENGINE POWER

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET ENGINE THRUST

ITEM 166 BLOCK 7: MASTER ARM

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 MASTER ARM ON

ITEM 167 BLOCK 7: ARM SPS ENGINE

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 ARM MAIN SPS

ITEM 168 BLOCK 7: ARM CSM RCS

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 ARM CSM RCS

TRAINING

FLIGHT PLAN

BLOCK 7 TEI & REENTRY

ITEM 169 **BLOCK 7: INITIATE AUTO SEQUENCE**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 AUTO SEQUENCE ON

ITEM 170 **BLOCK 7: ENTER GIMBAL RATES**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SWITCH ON INPUT
STEP 3 ENTER GIMBAL RATES
STEP 4 CHECK GIMBAL RATES

ITEM 172 **BLOCK 7: SET GIMBAL RATE**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SET GIMBAL ON

ITEM 173 **BLOCK 7: SET THRUST DURATION**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET THRUST DURATION

ITEM 174 **BLOCK 7: SET ENGINE POWER**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET ENGINE THRUST

ITEM 175 **BLOCK 7: MASTER ARM**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 MASTER ARM ON

ITEM 176 **BLOCK 7: ARM SPS ENGINE & CSM RCS**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 ARM MAIN SPS
STEP 3 ARM CSM RCS

TRAINING

FLIGHT PLAN

BLOCK 7 TEI & REENTRY

ITEM 177 BLOCK 7: INITIATE AUTO SEQUENCE

- STEP 1 SWITCH TO PANEL CSM 1
STEP 2 AUTO SEQUENCE ON

ITEM 178 BLOCK 7: BUS TIE LINE

- STEP 1 SWITCH TO PANEL CSM 3
STEP 2 BUS TIE LINE ON

ITEM 179 BLOCK 7: BATTERY A, B, C ENABLE

- STEP 1 SWITCH TO PANEL CSM 3
STEP 2 A BATTERY ON
STEP 3 B BATTERY ON
STEP 4 C BATTERY ON
STEP 5 CHECK BATT GAUGES

ITEM 180 BLOCK 7: MAIN A, B, C BUS ENABLE

- STEP 1 SWITCH TO PANEL CSM 3
STEP 2 A BUS ON
STEP 3 B BUS ON
STEP 4 C BUS ON
STEP 5 MAIN BUS ON
STEP 6 ALL ELECTRICAL GAUGES

ITEM 181 BLOCK 7: PYRO ARM

- STEP 1 SWITCH TO PANEL CSM 2
STEP 2 OPEN SAFETY COVER
STEP 3 PYRO ARM ON

ITEM: 182 BLOCK 7: SPS JETT

- STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SPS JETT ON

TRAINING

FLIGHT PLAN

BLOCK 7 TEI & REENTRY

ITEM 183 **BLOCK 7: MASTER ARM**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 MASTER ARM ON

ITEM 184 **BLOCK 7: ARM CSM RCS**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 ARM CSM RCS

ITEM 185 **BLOCK 7: ARM JOYSTICK**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 ARM JOYSTICK

ITEM 186 **BLOCK 7: ENTRY TRACK**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 ENTRY TRACK ON

ITEM 187 **BLOCK 7: CSM AUTO PILOT**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 AUTO PILOT ON

ITEM 188 **BLOCK 7: PYRO ARM**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 OPEN SAFETY COVER
STEP 3 PYRO ARM ON

ITEM 189 **BLOCK 7: CHUTES DEPLOY**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 CHUTES DEPLOY ON

ITEM 190 **BLOCK 7: WATER PACK / BEACON**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 WATER PACK BEACON ON

GENERAL
CAUTION & WARNING

CAUTION &
WARNING

SECTION 6-1
JSC LUNAR GENERIC, REV G 7/72

TRAINING

CAUTION & WARNING INDICATORS

ITEM C101 BLOCK C&W.CSM 2: UNDERVOLT



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK FUEL CELL INDICATORS
- STEP 3 CHECK BATTERY INDICATORS
- STEP 4 CHECK MAIN BREAKER CSM 3
- STEP 5 CHECK MAIN BUS CSM 3
- STEP 6 CHECK A, B, C BUS CSM 3
- STEP 7 CHECK SPS DATA CSM 2
- STEP 8 CHECK SYSTEM TEST CSM 2

ITEM C102 BLOCK C&W.CSM 2: NAV FAULT



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK GACS RATES CSM 2
- STEP 3 CHECK GIMBLE RATES CSM 2
- STEP 4 CHECK AUTO PILOT CSM 2

ITEM C103 BLOCK C&W.CSM 2: COMPUTER



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK COMPUTER STATUS CSM 2
- STEP 3 CHECK PRIME COMPUTER ON CSM 2
- STEP 4 CHECK BACK UP COMPUTER ON CSM 2

ITEM C104 BLOCK C&W.CSM 2: RADAR FAIL




- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK RADAR DISPLAY CSM 2
- STEP 3 CHECK RADAR SYSTEMS ON CSM 2
- STEP 4 CHECK MAIN BUS CSM 3


TRAINING

CAUTION & WARNING INDICATORS


ITEM C105 BLOCK C&W.CSM 2: SYSTEM FIRE

- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK ECS RATES CSM 2
 - STEP 3 CHECK SPS DATA CSM 2
 - STEP 4 CHECK COMPUTER STATUS CSM 2
 - STEP 5 CHECK FUEL CELL INDICATORS CSM 3
 - STEP 6 CHECK BATTERY INDICATORS CSM 3
 - STEP 7 CHECK MAIN BREAKER CSM 3
 - STEP 8 CHECK SPS BREAKER CSM 3

ITEM C106 BLOCK C&W.CSM 2: LOGIC FAIL

- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK COMPUTER STATUS CSM 2
 - STEP 3 CHECK PRIME COMPUTER ON CSM 2
 - STEP 4 CHECK BACK UP COMPUTER ON CSM 2

ITEM C107 BLOCK C&W.CSM 2: ENGINE FAIL

- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK SPS DATA CSM 2
 - STEP 3 CHECK COMPUTER STATUS CSM 2
 - STEP 4 CHECK FUEL GAUGE CSM 1
 - STEP 5 CHECK ENGINE BREAKER CSM 3
 - STEP 6 CHECK FUEL FLOW CSM 3
 - STEP 7 CHECK OXIDIZER FLOW CSM 3
 - STEP 8 CHECK HELIUM FLOW CSM 3
 - STEP 9 CHECK HELIUM GAUGE CSM 3
 - STEP 10 CHECK OXIDIZER GAUGE CSM 3
 - STEP 11 CHECK MAIN PUMP CSM 3


ITEM C108 BLOCK C&W.CSM 2: FUEL LOW

- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK FUEL GAUGE CSM 1


TRAINING

CAUTION & WARNING INDICATORS


ITEM C109 BLOCK C&W.CSM 2: MEMORY FAIL

- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK COMPUTER STATUS CSM 2
 - STEP 3 CHECK PRIME COMPUTER ON CSM 2
 - STEP 4 CHECK BACK UP COMPUTER ON CSM 2


ITEM C110 BLOCK C&W.CSM 2: O-2 SYSTEM

- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK SPS DATA CSM 2
 - STEP 3 CHECK ECS RATES CSM 2
 - STEP 4 CHECK O-2 FLOW CSM 3
 - STEP 5 CHECK MAIN PUMP ON CSM 3
 - STEP 6 CHECK O-2 PUMP ON CSM 3

ITEM C111 BLOCK C&W.CSM 2: FUEL CELL 1 TEMP

- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK SPS DATA CSM 2
 - STEP 3 CHECK ECS RATES CSM 2
 - STEP 4 CHECK FUEL CELL 1 GAUGE CSM 3
 - STEP 5 CHECK INVERTER ON CSM 3
 - STEP 6 CHECK F CELL 1 ON CSM 3
 - STEP 7 CHECK MAIN BREAKER ON CSM 3
 - STEP 8 CHECK A, B, C BJS ON CSM 3
 - STEP 9 CHECK ECS ON CSM 2

ITEM C112 BLOCK C&W.CSM 2: RADIO FAIL

- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK COMPUTER STATUS CSM 2
 - STEP 3 CHECK RADIO SYSTEMS CSM 2
 - STEP 4 CHECK PRIME FREQUENCY CSM 3
 - STEP 5 CHECK SECOND FREQUENCY CSM 3
 - STEP 6 CHECK ANT. MAST ON CSM 2

TRAINING

CAUTION & WARNING INDICATORS

ITEM C113 BLOCK C&W.CSM 2: RCS FAIL



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK RCS FUEL GAUGE CSM 1
- STEP 3 CHECK COMP STATUS CSM 2
- STEP 4 CHECK RCS FLOW CSM 3
- STEP 5 CHECK MAIN PUMP ON CSM 3
- STEP 6 CHECK ARM JOYSTICK ON CSM 2

ITEM C114 BLOCK C&W.CSM 2: H2-O SYSTEM



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK ECS RATES CSM 2
- STEP 3 CHECK H2-O PUMP CSM 3
- STEP 4 CHECK H2-O STR CSM 3

ITEM C115 BLOCK C&W.CSM 2: FUEL CELL 2 TEMP



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK SPS DATA CSM 2
- STEP 3 CHECK ECS RATES CSM 2
- STEP 4 CHECK FUEL CELL 2 GAUGE CSM 3
- STEP 5 CHECK INVERTER ON CSM 3
- STEP 6 CHECK F CELL 2 ON CSM 3
- STEP 7 CHECK MAIN BREAKER ON CSM 3
- STEP 8 CHECK A B C BUS ON CSM 3
- STEP 9 CHECK ECS ON CSM 2

ITEM C116 BLOCK C&W.CSM 2: S BAND FAIL



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK COMPUTER STATUS CSM 2
- STEP 3 CHECK RADIO SYSTEMS CSM 2
- STEP 4 CHECK PRIME FREQUENCY CSM 3
- STEP 5 CHECK SECOND FREQUENCY CSM 3
- STEP 6 CHECK ANT MAST ON CSM 2

TRAINING

CAUTION & WARNING INDICATORS

ITEM C117 BLOCK C&W.CSM 2: INVERTER FAIL



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK SPS DATA CSM 2
- STEP 3 CHECK INVERTER CSM 3
- STEP 4 CHECK MAIN BREAKER CSM 3
- STEP 5 CHECK A, B, C BJS CSM 3
- STEP 6 CHECK AMPS GAUGE CSM 3
- STEP 7 CHECK AC GAUGE CSM 3
- STEP 8 CHECK CSM BREAKER CSM 3
- STEP 9 SPS BREAKER CSM 3
- STEP 10 CHECK ANT. MAST ON CSM 2

ITEM C118 BLOCK C&W.CSM 2: MAIN PUMP



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK MAIN PUMP CSM 3
- STEP 3 CHECK SPS DATA CSM 2
- STEP 4 CHECK MAIN BREAKER CSM 3
- STEP 5 CHECK CSM BREAKER CSM 3

ITEM C119 BLOCK C&W.CSM 2: FUEL CELL 3 TEMP



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK SPS DATA CSM 2
- STEP 3 CHECK ECS RATES CSM 2
- STEP 4 CHECK FUEL CELL 3 GAUGE CSM 3
- STEP 5 CHECK INVERTER ON CSM 3
- STEP 6 CHECK F CELL 3 ON CSM 3
- STEP 7 CHECK MAIN BREAKER ON CSM 3
- STEP 8 CHECK A, B, C BLS ON CSM 3
- STEP 9 CHECK ECS ON CSM 2

ITEM C120 BLOCK C&W.CSM 2: TELEMETRY FAIL



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK COMPUTER STATUS CSM 2
- STEP 3 CHECK RADIO SYSTEMS CSM 2
- STEP 4 CHECK ANT. MAST ON CSM 2

TRAINING

CAUTION & WARNING INDICATORS

ITEM: C121 **BLOCK C&W.CSM 3: BATTERY A LOW**



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK BATTERY A GAUGE CSM 3
- STEP 3 CHECK BATTERY A ON CSM 3
- STEP 4 CHECK INVERTER ON CSM 3
- STEP 5 CHECK FUEL CELL 1 CSM 3

ITEM: C122 **BLOCK C&W.CSM 3: BATTERY B LOW**



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK BATTERY B GAUGE CSM 3
- STEP 3 CHECK BATTERY B ON CSM 3
- STEP 4 CHECK INVERTER ON CSM 3
- STEP 5 CHECK FUEL CELL 2 CSM 3

ITEM: C123 **BLOCK C&W.CSM 3: BATTERY C LOW**



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK BATTERY C GAUGE CSM 3
- STEP 3 CHECK BATTERY C ON CSM 3
- STEP 4 CHECK INVERTER ON CSM 3
- STEP 5 CHECK FUEL CELL 3 CSM 3

ITEM: C124 **BLOCK C&W.CSM 3: HELIUM LOW**



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK HELIUM GAUGE CSM 3
- STEP 3 CHECK HELIUM FLOW ON CSM 3
- STEP 4 CHECK SPS DATA DISPLAY CSM 2
- STEP 5 CHECK ECS RATES CSM 2

ITEM: C125 **BLOCK C&W.CSM 3: OXIDIZER LOW**




- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK OXIDIZER GAUGE CSM 3
- STEP 3 CHECK OXIDIZER FLOW ON CSM 3
- STEP 4 CHECK SPS DATA DISPLAY CSM 2
- STEP 5 CHECK ECS RATES CSM 2


TRAINING

CAUTION & WARNING INDICATORS


ITEM C126 **BLOCK C&W.CSM 3: FUEL CELL 1 FAIL**

- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK FUEL CELL 1 GAUGE CSM 3
 - STEP 3 CHECK FUEL CELL 1 ON CSM 3
 - STEP 4 CHECK INVERTER ON CSM 3
 - STEP 5 CHECK SPS DATA CSM 2
 - STEP 6 CHECK AMPS GAUGE CSM 3
 - STEP 7 CHECK AC GAUGE CSM 3


ITEM C127 **BLOCK C&W.CSM 3: FUEL CELL 2 FAIL**

- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK FUEL CELL 2 GAUGE CSM 3
 - STEP 3 CHECK FUEL CELL 2 ON CSM 3
 - STEP 4 CHECK INVERTER ON CSM 3
 - STEP 5 CHECK SPS DATA CSM 2
 - STEP 6 CHECK AMPS GAUGE CSM 3
 - STEP 7 CHECK AC GAUGE CSM 3

ITEM C128 **BLOCK C&W.CSM 3: FUEL CELL 3 FAIL**


- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK FUEL CELL 3 GAUGE CSM 3
 - STEP 3 CHECK FUEL CELL 3 ON CSM 3
 - STEP 4 CHECK INVERTER ON CSM 3
 - STEP 5 CHECK SPS DATA CSM 2
 - STEP 6 CHECK AMPS GAUGE CSM 3
 - STEP 7 CHECK AC GAUGE CSM 3


ITEM C129 **BLOCK C&W.CSM 3: A BUS UNDERVOLT**

- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK A BUS ON CSM 3
 - STEP 3 CHECK FUEL CELL 1 ON CSM 3
 - STEP 4 CHECK INVERTER ON CSM 3
 - STEP 5 CHECK SPS DATA CSM 2
 - STEP 6 CHECK AMPS GAUGE CSM 3
 - STEP 7 CHECK AC GAUGE CSM 3

TRAINING

CAUTION & WARNING INDICATORS

ITEM C130	BLOCK C&W.CSM 3: B BUS UNDERVOLT
	<p>STEP 1 CLEAR MASTER ALARM CSM 2</p> <p>STEP 2 CHECK B BUS ON CSM 3</p> <p>STEP 3 CHECK FUEL CELL 2 ON CSM 3</p> <p>STEP 4 CHECK INVERTER ON CSM 3</p> <p>STEP 5 CHECK SPS DATA CSM 2</p> <p>STEP 6 CHECK AMPS GAUGE CSM 3</p> <p>STEP 7 CHECK AC GAUGE CSM 3</p>

ITEM C131	BLOCK C&W.CSM 3: C BUS UNDERVOLT
	<p>STEP 1 CLEAR MASTER ALARM CSM 2</p> <p>STEP 2 CHECK C BUS ON CSM 3</p> <p>STEP 3 CHECK FUEL CELL 3 ON CSM 3</p> <p>STEP 4 CHECK INVERTER ON CSM 3</p> <p>STEP 5 CHECK SPS DATA CSM 2</p> <p>STEP 6 CHECK AMPS GAUGE CSM 3</p> <p>STEP 7 CHECK AC GAUGE CSM 3</p>

ITEM: C132	BLOCK C&W.CSM 3: TEMPATURE HIGH
	<p>STEP 1 CLEAR MASTER ALARM CSM 2</p> <p>STEP 2 CHECK SPS DATA D SPLAY CSM 2</p> <p>STEP 3 CHECK ECS RATES CSM 2</p>

CSM / LM SOLUTIONS

SECTION 8-1

JSC LUNAR GENERIC, REV K 3/15/73

TRAINING

COMMAND MODULE SOLUTIONS

ITEM P501 **BLOCK:** SATURN S-1C ENGINE FAILURE



- STEP 1 CHECK MASTER ALARM & C&W CSM 2 3
- STEP 2 CHECK SATURN ENGINE STATUS CSM 1
- STEP 3 CHECK G MBAL RATES CSM 2
- STEP 4 CHECK ASCENT RATE CSM 1
- STEP 5 CONSULT MCC
- STEP 6 JETT SON S-1C FAILED STAGE
- STEP 7 IF FAILURE CONTINUES, LES JETT CSM 1

ITEM P502 **BLOCK:** SATURN S-II ENGINE FAILURE



- STEP 1 CHECK MASTER ALARM & C&W CSM 2 3
- STEP 2 CHECK SATURN ENGINE STATUS CSM 1
- STEP 3 CHECK G MBAL RATES CSM 2
- STEP 4 CHECK ASCENT RATE CSM 1
- STEP 5 CONSULT MCC
- STEP 6 JETT SON S-II FAILED STAGE
- STEP 7 IF FAILURE CONTINUES, LES JETT CSM 1

ITEM P503 **BLOCK:** SATURN S-4B ENGINE FAILURE



- STEP 1 CHECK MASTER ALARM & C&W CSM 2 3
- STEP 2 CHECK SATURN ENGINE STATUS CSM 1
- STEP 3 CHECK G MBAL RATES CSM 2
- STEP 4 CHECK ASCENT RATE CSM 1
- STEP 5 CONSULT MCC
- STEP 6 JETTISON S-4B FAILED STAGE
- STEP 7 IF FAILURE CONTINUES, LES JETT CSM 1

ITEM P504 **BLOCK:** SYSTEM FIRE




- STEP 1 CHECK MASTER ALARM & C&W CSM 2 3
- STEP 2 CHECK SPS DATA CSM 2
- STEP 3 CHECK ECS RATES CSM 2
- STEP 4 CONSULT MCC
- STEP 5 MAIN BREAKER OFF CSM 3
- STEP 6 MAIN BUS OFF CSM 3

TRAINING

COMMAND MODULE SOLUTIONS


ITEM P505 **BLOCK:** ASCENT TRACK FAULT

- 
- STEP 1 CHECK MASTER ALARM & C&W CSM 2
 - STEP 2 CHECK ASCENT TRACK DATA CSM 1
 - STEP 3 CHECK SLOPE INDICATOR CSM 1
 - STEP 4 CHECK GIMBAL RATES CSM 2
 - STEP 5 CHECK 8 BALL CSM 1
 - STEP 6 ARM JOYSTICK CSM 2
 - STEP 7 MANUAL FIRE CSM 1
 - STEP 8 MONITOR SLOPE TRACK CSM 3

ITEM P506 **BLOCK:** S-1C JETTISON

- 
- STEP 1 CHECK THRUST DURATION CSM 1
 - STEP 2 CHECK SATURN ENGINE STATUS CSM 1
 - STEP 3 WHEN ENGINE CUTOFF / S-1C JETT CSM 1
 - STEP 4 CONSULT MCC


ITEM P507 **BLOCK:** S-2 JETTISON

- 
- STEP 1 CHECK THRUST DURATION CSM 1
 - STEP 2 CHECK SATURN ENGINE STATUS CSM 1
 - STEP 3 WHEN ENGINE CUTOFF / S-2 JETT CSM 1
 - STEP 4 CONSULT MCC

ITEM P508 **BLOCK:** S-4B JETTISON

- 
- STEP 1 CHECK THRUST DURATION CSM 1
 - STEP 2 CHECK SATURN ENGINE STATUS CSM 1
 - STEP 3 WHEN ENGINE CUTOFF / S-4B JETT CSM 1
 - STEP 4 CONSULT MCC


ITEM P509 **BLOCK:** LES JETTISON

- 
- STEP 1 CHECK COMPUTER STATUS CSM 1
 - STEP 2 CONFIRM WITH MCC
 - STEP 3 LAUNCH ESCAPE ON CSM 1


TRAINING

COMMAND MODULE SOLUTIONS


ITEM P510 **BLOCK:** FUEL CELL 1 SHUT DOWN

- 
- STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
 - STEP 2 BUS TIE-LINE ON CSM 3
 - STEP 3 A BUS OFF CSM 3
 - STEP 4 B BUS ON CSM 3
 - STEP 5 FUEL CELL 1 OFF CSM 3
 - STEP 6 CHECK ECS RATES CSM 2
 - STEP 7 CHECK AMPS GAUGE CSM 3
 - STEP 8 CHECK AC GAUGE CSM 3
 - STEP 9 CHECK CELL 1 GAUGE CSM 3

ITEM P511 **BLOCK:** TWO FUEL CELL SHUT DOWN

- 
- STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
 - STEP 2 BUS TIE-LINE ON CSM 3
 - STEP 3 B BUS OFF CSM 3
 - STEP 4 A BUS ON CSM 3
 - STEP 5 FUEL CELL 2 OFF CSM 3
 - STEP 6 CHECK ECS RATES CSM 2
 - STEP 7 CHECK AMPS GAUGE CSM 3
 - STEP 8 CHECK AC GAUGE CSM 3
 - STEP 9 CHECK CELL 2 GAUGE CSM 3

ITEM P512 **BLOCK:** FUEL CELL 3 SHUT DOWN

- 
- STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
 - STEP 2 BUS TIE-LINE ON CSM 3
 - STEP 3 C BUS OFF CSM 3
 - STEP 4 A BUS ON CSM 3
 - STEP 5 FUEL CELL 3 OFF CSM 3
 - STEP 6 CHECK ECS RATES CSM 2
 - STEP 7 CHECK AMPS GAUGE CSM 3
 - STEP 8 CHECK AC GAUGE CSM 3
 - STEP 9 CHECK CELL 3 GAUGE CSM 3

TRAINING

COMMAND MODULE SOLUTIONS

ITEM P513 **BLOCK:** FUEL CELL 1 & 2 SHUT DOWN

- STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
- STEP 2 BJS TIE LINE ON CSM 3
- STEP 3 A BJS OFF CSM 3
- STEP 4 B BJS OFF CSM 3
- STEP 5 C BJS ON CSM 3
- STEP 6 FUEL CELL 1 OFF CSM 3
- STEP 7 FUEL CELL 2 OFF CSM 3
- STEP 8 CHECK ECS RATES CSM 2
- STEP 9 CHECK CELL 1 & 2 GAUGE CSM 3
- STEP 10 CHECK DC GAUGE
- STEP 11 CHECK CELL 1 & 2 GAUGE CSM 3

ITEM P514 **BLOCK:** FUEL CELL 1, 2 & 3 SHUT DOWN

- STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
- STEP 2 BJS TIE LINE ON CSM 3
- STEP 3 A BJS OFF CSM 3
- STEP 4 B BJS OFF CSM 3
- STEP 5 C BJS OFF CSM 3
- STEP 6 FUEL CELL 1 OFF CSM 3
- STEP 7 FUEL CELL 2 OFF CSM 3
- STEP 8 FUEL CELL 3 OFF CSM 3
- STEP 9 CHECK ECS RATES CSM 2
- STEP 10 CHECK CELL 1, 2, & 3 GAUGES CSM 3
- STEP 11 CHECK BATT 1, 2, & 3 GAUGES CSM 3
- STEP 12 CHECK DC GAUGE CSM 3

ITEM P515 **BLOCK:** GNC FAIL

- STEP 1 CHECK GNCS DATA CSM 2
- STEP 2 IMJ OFF CSM 2
- STEP 3 EXTERNAL CAMERA ON CSM 2
- STEP 4 STAR FINDER ON CSM 2
- STEP 5 RCS OR MAIN SPS ON
- STEP 6 ARM JOYSTICK ON
- STEP 7 USE RCS/SPS THRUST TO ALIGN COURSE

TRAINING

COMMAND MODULE SOLUTIONS

ITEM P516 **BLOCK: 3-4B ENGINE FAIL**



- STEP 1 CHECK GNCS DATA CSM 2
- STEP 2 CHECK COMP STATUS CSM 2
- STEP 3 CHECK S 4B FUEL GAUGE CSM 2
- STEP 4 ARM S1C S2, S4B CSM 1
- STEP 5 MANUAL FIRE ON CSM 1
- STEP 6 ENGINE FAILS, ABORT MISSION
- STEP 7 S4B JETT ON
- STEP 8 SEE MISSION ABORT BLOCK TL

ITEM P517 **BLOCK: COMPUTER FAIL**



- STEP 1 CHECK COMPUTER STATUS CSM 2
- STEP 2 PRIME COMPUTER RESET OFF/ON CSM 2
- STEP 3 IF RESET FAILS, PRIME COMP OFF CSM 2
- STEP 4 BACK UP COMPUTER OFF/ON CSM 2
- STEP 5 IF RESET FAILS, BK-UP COMP OFF
- STEP 6 CONSULT MCC

ITEM P518 **BLOCK: RCS FAIL**



- STEP 1 CHECK SPS STATUS CSM 2
- STEP 2 CHECK COMP STATUS CSM 2
- STEP 3 CHECK RCS FUEL GAUGE CSM 1
- STEP 4 RESET RCS FUEL FLOW CSM 3
- STEP 5 RESET ARM JOYSTICK CSM 2
- STEP 6 CONSULT MCC

ITEM P519 **BLOCK: SPS ENGINE FAIL**




- STEP 1 CHECK SPS STATUS CSM 2
- STEP 2 CHECK COMP STATUS CSM 2
- STEP 3 CHECK SPS FUEL GAUGE CSM 1
- STEP 4 RESET FUEL FLOW CSM 3
- STEP 5 RESET ENGINE BREAKER CSM 3
- STEP 6 RESET MAIN SPS ENGINE CSM 1
- STEP 7 CONSULT MCC


TRAINING

COMMAND MODULE SOLUTIONS

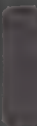
ITEM P520 BLOCK: 8 BALL FAILURE

- 
- STEP 1 CHECK SPS STATUS CSM 2
 - STEP 2 CHECK GNCS RATES CSM 2
 - STEP 3 RESET IMJ SYSTEM CSM 2
 - STEP 4 CONSULT MCC

ITEM P521 BLOCK: BATTERY A SHUT DOWN

- 
- STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
 - STEP 2 BUS TIE-LINE ON CSM 3
 - STEP 3 A BUS OFF CSM 3
 - STEP 4 B BJS ON CSM 3
 - STEP 5 C BUS ON CSM 3
 - STEP 6 BATTERY A OFF CSM 3
 - STEP 7 BATTERY B ON CSM 3
 - STEP 8 BATTERY C ON CSM 3
 - STEP 9 CHECK ECS RATES CSM 2
 - STEP 10 CHECK BATT 1 GAUGE CSM 3
 - STEP 11 CHECK BATT 2 & 3 GAUGES CSM 3
 - STEP 12 CHECK DC GAUGE CSM 3

ITEM P523 BLOCK: BATTERY B SHUT DOWN

- 
- STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
 - STEP 2 BUS TIE-LINE ON CSM 3
 - STEP 3 A BUS ON CSM 3
 - STEP 4 B BJS OFF CSM 3
 - STEP 5 C BUS ON CSM 3
 - STEP 6 BATTERY A ON CSM 3
 - STEP 7 BATTERY B OFF CSM 3
 - STEP 8 BATTERY C ON CSM 3
 - STEP 9 CHECK ECS RATES CSM 2
 - STEP 10 CHECK BATT B GAUGE CSM 3
 - STEP 11 CHECK BATT A & C GAUGES CSM 3
 - STEP 12 CHECK DC GAUGE CSM 3

TRAINING

COMMAND MODULE SOLUTIONS

ITEM P524 **BLOCK:** BATTERY C SHUT DOWN



- STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
- STEP 2 BUS TIE-LINE ON CSM 3
- STEP 3 A BUS ON CSM 3
- STEP 4 B BJS ON CSM 3
- STEP 5 C BUS OFF CSM 3
- STEP 6 BATTERY A ON CSM 3
- STEP 7 BATTERY B ON CSM 3
- STEP 8 BATTERY C OFF CSM 3
- STEP 9 CHECK ECS RATES CSM 2
- STEP 10 CHECK BATT C GAUGE CSM 3
- STEP 11 CHECK BATT A & B GAUGES CSM 3
- STEP 12 CHECK DC GAUGE CSM 3

ITEM P525 **BLOCK:** BATTERY A, B & C SHUT DOWN



- STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
- STEP 2 BUS TIE LINE ON CSM 3
- STEP 3 A BUS OFF CSM 3
- STEP 4 B BJS OFF CSM 3
- STEP 5 C BUS OFF CSM 3
- STEP 6 BATTERY A OFF CSM 3
- STEP 7 BATTERY B OFF CSM 3
- STEP 8 BATTERY C OFF CSM 3
- STEP 9 CHECK ECS RATES CSM 2
- STEP 10 CHECK BATT A B & C GAUGES
- STEP 11 START BACK UP BATT (see item p525)
- STEP 12 CHECK DC GAUGE CSM 3

ITEM P526 **BLOCK:** BACK-UP BATTERY




- STEP 1 CHECK SPS STATUS CSM 2
- STEP 2 MAIN BUS TIE LINE ON CSM 3
- STEP 3 A B C BJS ON CSM 3
- STEP 4 BK-UP BATT ON CSM 2
- STEP 5 CHECK DC GAUGE CSM 3
- STEP 6 CONSULT MCC


TRAINING

COMMAND MODULE SOLUTIONS


ITEM P527 **BLOCK:** CSM SYSTEM FAILURE

- 
- STEP 1 BACK UP BATTERY ON CSM 2
 - STEP 2 CSM SYSTEM (RESTART) CSM 2
 - STEP 3 DATA DISPLAY ON CSM 2
 - STEP 4 RADIO SYSTEM (RESET) CSM 2
 - STEP 5 BATTERY (RESTART) (see BLOCK 1)
 - STEP 6 CSM BREAKER (RESET) CSM 3
 - STEP 7 ECS SYSTEM (RESTART) CSM 2
 - STEP 8 CONSULT MCC


ITEM P528 **BLOCK:** COMPUTER DISPLAY FAILURE

- 
- STEP 1 CHECK COMP STATUS CSM 2
 - STEP 2 PRIME COMPUTER (RESTART) CSM 2
 - STEP 3 BACK-UP COMPUTER (RESTART) CSM 2
 - STEP 4 CSM SYSTEM (RESET) CSM 3
 - STEP 5 CONSULT MCC

ITEM P528 **BLOCK:** ENGINE HEATER FAIL

- 
- STEP 1 CHECK SPS DATA CSM 2
 - STEP 2 ENGINE HEATER (RESTART) CSM 2
 - STEP 3 ROLL CSM PROGRAM (4 FVS PER MIN)
 - STEP 4 STIR H-2O TANKS
 - STEP 5 STIR A & B TANKS CSM 3
 - STEP 6 CONSULT MCC


ITEM P529 **BLOCK:** SPS SYSTEM FAILURE

- 
- STEP 1 BACK UP BATTERY ON CSM 2
 - STEP 2 CSM SYSTEM (RESTART) CSM 2
 - STEP 3 DATA DISPLAY ON CSM 2
 - STEP 4 RADIO SYSTEM (RESET) CSM 2
 - STEP 5 BATTERY (RESTART) (see BLOCK 1)
 - STEP 6 SPS BREAKER (RESET) CSM 3
 - STEP 7 ECS SYSTEM (RESTART) CSM 2
 - STEP 8 CONSULT MCC


TRAINING

COMMAND MODULE SOLUTIONS


ITEM P601 **BLOCK:** LM DESCENT ENGINE FAILURE

- 
- STEP 1 CHECK MASTER ALARM & C&W LM 1 2
 - STEP 2 CHECK LM DESCENT ENGINE STATUS LM 1
 - STEP 3 CHECK GIMBAL RATES LM 3
 - STEP 4 (RESET) ENGINE BREAKER LM 3
 - STEP 5 CHECK DESCENT FUEL GAUGE LM 1
 - STEP 6 RESTART FUEL PUMP LM 3
 - STEP 7 (RESET) FUEL SYSTEM LM 3
 - STEP 8 CONSULT MCC
 - STEP 9 IF FAILURE CONTINUES ABORT LANDING


ITEM P602 **BLOCK:** LM ASCENT ENGINE FAILURE

- 
- STEP 1 CHECK MASTER ALARM & C&W LM 1 2
 - STEP 2 CHECK LM ASCENT ENGINE STATUS LM 1
 - STEP 3 CHECK GIMBAL RATES LM 3
 - STEP 4 (RESET) ENGINE BREAKER LM 3
 - STEP 5 CHECK ASCENT FUEL GAUGE LM 1
 - STEP 6 RESTART FUEL PUMP LM 3
 - STEP 7 (RESET) FUEL SYSTEM LM 3
 - STEP 8 CONSULT MCC

ITEM P603 **BLOCK:** ENGINE HEATER FAIL

- 
- STEP 1 CHECK COMP STATUS LM 3
 - STEP 2 ENGINE HEATER (RESTART) LM 3
 - STEP 3 RESET LM SYSTEM LM 3
 - STEP 4 TANK STIR LM 3
 - STEP 5 CONSULT MCC


ITEM P604 **BLOCK:** LM SYSTEM FAILURE

- 
- STEP 1 BACK UP BATTERY ON LM 3
 - STEP 2 LM SYSTEM (RESTART) LM 3
 - STEP 3 RADIO SYSTEM (RESET) LM 3
 - STEP 4 BATTERY (RESTART) (see BLOCK 3)
 - STEP 5 MAIN BREAKER (RESET) LM 3
 - STEP 6 CONSULT MCC


TRAINING

COMMAND MODULE SOLUTIONS


ITEM: P605 BLOCK: 8 BALL FAILURE

- 
- STEP 1 CHECK COMP STATUS LM 3
 - STEP 2 CHECK ASCENT/DESCENT RATES LM 3
 - STEP 3 (RESET) ML SYSTEM LM 2
 - STEP 4 CONSULT MCC

ITEM P606 BLOCK: BATTERY A SHUT DOWN

- 
- STEP 1 CHECK COMPUTER STATUS LM 3
 - STEP 2 MAIN BUS TIE LINE ON LM 3
 - STEP 3 A BUS OFF LM 3
 - STEP 4 B BUS ON LM 3
 - STEP 5 C BUS ON LM 3
 - STEP 6 BATTERY A OFF LM 3
 - STEP 7 BATTERY B ON LM 3
 - STEP 8 BATTERY C ON LM 3
 - STEP 9 CHECK VOLTS GAUGE LM 3
 - STEP 10 CHECK BATT A GAUGE LM 3
 - STEP 11 CHECK BATT B & C GAUGES LM 3
 - STEP 12 CHECK DC GAUGE LM 3

ITEM: P607 BLOCK: BATTERY B SHUT DOWN

- 
- STEP 1 CHECK COMPUTER STATUS LM 3
 - STEP 2 MAIN BUS TIE-LINE ON LM 3
 - STEP 3 A BUS OFF LM 3
 - STEP 4 B BUS ON LM 3
 - STEP 5 C BUS ON LM 3
 - STEP 6 BATTERY A ON LM 3
 - STEP 7 BATTERY B OFF LM 3
 - STEP 8 BATTERY C ON LM 3
 - STEP 9 CHECK VOLTS GAUGE LM 3
 - STEP 10 CHECK BATT B GAUGE LM 3
 - STEP 11 CHECK BATT A & C GAUGES LM 3
 - STEP 12 CHECK DC GAUGE LM 3

TRAINING**COMMAND MODULE SOLUTIONS****ITEM P608 BLOCK: BATTERY C SHUT DOWN**

STEP 1 CHECK COMPUTER STATUS LM 3
 STEP 2 MAIN BUS TIE LINE ON LM 3
 STEP 3 A BUS ON LM 3
 STEP 4 B BUS ON LM 3
 STEP 5 C BUS OFF LM 3
 STEP 6 BATTERY A ON LM 3
 STEP 7 BATTERY B ON LM 3
 STEP 8 BATTERY C OFF LM 3
 STEP 9 CHECK VOLTS GAUGE LM 3
 STEP 10 CHECK BATT C GAUGE LM 3
 STEP 11 CHECK BATT A & B GAUGES LM 3
 STEP 12 CHECK DC GAUGE LM 3

ITEM: P609 BLOCK: BATTERY A, B & C SHUT DOWN

STEP 1 CHECK COMP STATUS LM 3
 STEP 2 MAIN BUS TIE LINE ON CSM 3
 STEP 3 A BUS OFF LM 3
 STEP 4 B BUS OFF LM 3
 STEP 5 C BUS OFF LM 3
 STEP 6 BATTERY A OFF LM 3
 STEP 7 BATTERY B OFF LM 3
 STEP 8 BATTERY C OFF LM 3
 STEP 9 CHECK VOLTS GAUGE LM 3
 STEP 10 CHECK BATT A B & C GAUGES
 STEP 11 START BACK UP BATT (see item p 610)
 STEP 12 CHECK DC GAUGE LM 3


ITEM P610 BLOCK: BACK-UP BATTERY

STEP 1 CHECK COMP STATUS CSM 2
 STEP 2 BK BATT ON LM 3
 STEP 3 MAIN BUS TIE LINE ON LM 3
 STEP 4 A B C BUS ON LM 3
 STEP 5 CHECK DC GAUGE LM 3
 STEP 6 CONSULT MCC


TRAINING

COMMAND MODULE SOLUTIONS


ITEM P611 **BLOCK: COMPUTER FAIL**

- 
- STEP 1 CHECK COMPUTER STATUS LM 2
 - STEP 2 PRIME COMPUTER RESET OFF/ON LM 2
 - STEP 3 IF RESET FAILS, PRIME COMP OFF LM 2
 - STEP 4 BACK UP COMPUTER OFF/ON LM 2
 - STEP 5 IF RESET FAILS, BK UP COMP OFF
 - STEP 6 CONSULT MCC


ITEM P612 **BLOCK: RCS FAIL**

- 
- STEP 1 CHECK COMPUTER STATUS LM 3
 - STEP 2 CHECK RCS FUEL GAUGE LM 1
 - STEP 3 RESET RCS TANK LM 2
 - STEP 4 RESET ARM JOYST CK LM 2
 - STEP 5 CONSULT MCC


ITEM P613 **BLOCK: SYSTEM FIRE**

- 
- STEP 1 CHECK MASTER ALARM & C&W LM 1
 - STEP 2 CHECK COMPUTER STATUS LM 3
 - STEP 3 CONSULT MCC
 - STEP 4 MAIN BREAKER OFF LM 3
 - STEP 5 MAIN BUS OFF LM 3

ITEM P614 **BLOCK: NO LANDING GEAR LOCK**

- 
- STEP 1 CHECK MASTER ALARM & C&W LM 1, 2
 - STEP 2 RESET GEAR LOCK LM 2
 - STEP 3 CONSULT MCC
 - STEP 4 (RECYCLE) MAIN BUS LM 3
 - STEP 5 CONSULT MCC

ITEM P615 **BLOCK: LOW RCS (ASCENT) FUEL**

- 
- STEP 2 RCS TANK OPEN LM 2
 - STEP 3 RCS TIE-LINE ON LM 2
 - STEP 4 (RESTART) MAIN FUEL PUMP LM 2

CUE CARDS (TRAINING)

SECTION 9-1

JSC LUNAR GENERIC, REV K 3/15/73

CUE CARDS

TRAINING

SAT. V LAUNCH SEQUENCE		CUE CARD
EVENT		TIME
1. S-1C ENGINE IGNITION		MINUS 05
2. ALL ENGINES RUNNING		+ 0 SEC
3. FIRST MOTION		+ 1 SEC
4. LIFTOFF		+ 3 SEC
5. TOWER CLEAR		+ 5 SEC
6. HOUSTON CONTROLS		+ 6 SEC
7. ROLL PROGRAM		+ 7 SEC
8. PITCH PROGRAM		+ 10 SEC
9. MAXIMUM DYNAMIC PRESSURE		+ 25 SEC
10. S1-C ENGINE SHUTDOWN		+125 SEC
11. S1-C STAGE SEPARATION		+148 SEC
12. S-II IGNITION		+150 SEC
13. S-II ENGINE SHUTDOWN		+225 SEC
14. S-II SEPARATION		+227 SEC
15. S-4B IGNITION		+230 SEC
16. S-4B 1ST CUTOFF		+315 SEC
17. EARTH ORBIT		+320 SEC

NOTE: ALL EVENTS ARE BOTH ONBOARD COMPUTER ASSISTED AND OR MANUALLY ACCOMPLISHED. LISTEN FOR MISSION CONTROL CUES AND AUDIO ALERTS.

TRAINING

LUNAR LANDING

CUE CARD

EVENT	TIME
1. RCS THRUST AWAY FROM CSM	- 260 SEC
2. LM DESCENT ENGINE IGNITION	- 250 SEC
3. LM RADAR ON	- 240 SEC
4. ABORT GUIDANCE ON	- 230 SEC
5. POWER DESCENT INSERTION	- 220 SEC
6. HIGH GATE COMPUTER PHASE	- 200 SEC
7. LOW GATE COMPUTER PHASE	- 160 SEC
8. PITCHOVER COMPUTER PHASE	- 120 SEC
9. MANUAL RCS CONTROL	- 50 SEC
10. CONTACT LIGHT	- 10 SEC
11. TOUCHDOWN	- 0 SEC

NOTE: LUNAR MODULE PRIME COMPUTER SYSTEM WILL HANDLE PDI PHASE PROVIDING PROPER GMBAL ANGLES HAVE BEEN ENTERED. MANUAL CONTROLS RELEASED TO PILOT AFTER PITCHOVER PHASE AT THE 1000 FOOT ALTITUDE. LISTEN FOR ALIGN SIGHT MCC CALL. LUNAR MODULE PILOT MUST LAND SPACECRAFT BEFORE DESCENT FUEL REACHES 20 POUNDS OR AGS WILL AUTO ABORT LANDING. LM MUST LAND WITHIN 20 FEET OF RTT 301.

TRAINING

LUNAR LIFTOFF

CUE CARD

EVENT	TIME
1. ASCENT TANK ENABLE	- 135 SEC
2. FUEL PUMP ENABLE	- 125 SEC
3. RCS TANK ENABLE	- 120 SEC
4. ASCENT ENGINE ARM	- 110 SEC
5. ENTER GIMBAL DATA	- 105 SEC
6. SET GIMBAL	- 50 SEC
7. SET THRUST DURATION	- 40 SEC
8. SET THRUST PERCENTAGE	- 30 SEC
9. MASTER ARM	- 20 SEC
10. AUTO SEQ	- 10 SEC
11. ASCENT ENGINE IGNITION	- 2 SEC
12. LIFTOFF	- 0 SEC
13. PITCHOVER PHASE	+ 20 SEC
14. LOW GATE PHASE	+ 20 SEC
15. HIGH GATE PHASE	+ 20 SEC
16. ASCENT ENGINE CUTOFF	+225 SEC
17. RCS THRUST & CSM DOCK	+305 SEC
18. CSM LM DOCK	+400 SEC

TRAINING

SPS ENGINE BURN

CUE CARD

EVENT	TIME
1. ENGINE BREAKER ENABLE	- 135 SEC
2. ENTER GIMBAL DATA	- 135 SEC
3. SET GIMBAL ANGLE	- 135 SEC
4. ENTER THRUST PERCENTAGE	- 135 SEC
5. SET THRUST DURATION	- 135 SEC
6. ARM SPS ENGINE	- 135 SEC
7. MASTER ARM ON	- 135 SEC
8. AUTO SEQUENCE ENABLE	- 135 SEC
9. IGNITION	- 135 SEC
10. MONITOR SPS DATA (CSM 2)	- 135 SEC
11. MONITOR SPS FUEL RESERVES	- 135 SEC
12. SPS ENGINE CUTOFF	- 135 SEC
13. CHECK GIMBAL ANGLES	- 135 SEC
14. CHECK STAR FINDER SYSTEM	- 135 SEC

NOTE: ALL CUE CARD ENGINE BURN PROCEDURES ARE FOR REFERENCE ONLY! ALWAYS FOLLOW MCC RADIO CALLS AND DIRECTIONS

CHECK ELECTRICAL OUTPUT DURING ALL SPS ENGINE FIRINGS
WITH AUTO SEQUENCE, NEVER ALLOW PRIME COMPUTER TO REBOOT

TRAINING

POST LUNAR LANDING

CUE CARD

EVENT	TIME
1. MASTER ARM OFF	+ 5 SEC
2. RCS OFF	+ 5 SEC
3. FUEL PUMP OFF	+ 5 SEC
4. ARM JOYSTICK OFF	+ 10 SEC
5. QUAD PORT OFF	+ 10 SEC
6. QUAD STARBOARD OFF	+ 10 SEC
7. QUAD FWD/REV OFF	+ 10 SEC
8. OXIDIZER OFF	+ 15 SEC
9. HYDROGEN OFF	+ 15 SEC
10. RADAR OFF	+ 15 SEC
11. PGNS OFF	+ 15 SEC
12. AGS OFF	+ 15 SEC

POWER DOWN ALL NON ESSENTIAL SYSTEMS

WATCH ALL BATTERY AND FUEL QUANTITIES

LISTEN FOR HISSING CAUSED BY PUMP OR TANK RUPTURE

LISTEN FOR RADIO FREQ. CHANGES CALLED BY MCC

DO NOT DEPRESS LM CABIN OR ATTEMPT LUNAR

LIFTOFF WITH OUT MCC APPROVAL

APOLLO 18
TAURUS LITTROW
FLIGHT PLAN
DOD OPS

SECTION 10-1
JSC LUNAR GENERIC, REV K 3/15/73

TAURUS LITTROW

FLIGHT PLAN

BLOCK 1 LAUNCH

ITEM 001 BLOCK 1: RADIO FREQUENCY SETTINGS

STEP 1 SWITCH TO PANEL CSM 3
STEP 2 SET PRIMARY FREQUENCY
STEP 3 SET PRIMARY CHANNEL

ITEM 002 BLOCK 1: RADIO FREQUENCY SETTINGS

STEP 1 SET SECONDARY FREQUENCY
STEP 2 SET SECONDARY CHANNEL
STEP 3 VOICE CHECK

ITEM 003 BLOCK 1: COMMAND MODULE SYSTEM

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 CSM SYSTEM ON
STEP 3 DATA DISPLAY ON
STEP 4 COMPUTER DISPLAY ON

ITEM 004 BLOCK 1: INERTIAL MEASUREMENT UNIT

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 IMU ON

ITEM: 005 BLOCK 1: PRIME COMPUTER

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 PRIME COMP ON
STEP 3 CHECK COMPUTER DISPLAY READOUT

ITEM 006 BLOCK 1: GUIDANCE NAVIGATION CONTROL

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 GNCS ON
STEP 3 CHECK GNCS RATES DISPLAY READOUT

TAURUS LITTROW

FLIGHT PLAN

BLOCK 1 LAUNCH

ITEM 007 **BLOCK 1: FUEL CELL ACTIVATION**

STEP 1 SWITCH TO PANEL CSM 3
 STEP 2 FUEL CELL 1 ON
 STEP 3 FUEL CELL-2 ON
 STEP 4 FUEL CELL-3 ON
 STEP 5 CHECK ALL FUEL CELL GAUGES

ITEM: 008 **BLOCK 1: FUEL FLOW ON**

STEP 1 SWITCH TO PANEL CSM 3
 STEP 2 FUEL FLOW ON
 STEP 3 SWITCH TO CSM 1 CHECK FUEL GAUGE

ITEM 009 **BLOCK 1: OXIDIZER FLOW ON**

STEP 1 SWITCH TO PANEL CSM 3
 STEP 2 OXID FLOW ON
 STEP 3 CHECK OXID GAUGE

ITEM 010 **BLOCK 1: MAIN PUMP ON**

STEP 1 SWITCH TO PANEL CSM 3
 STEP 2 MAIN PUMP ON

ITEM: 011 **BLOCK 1: HYDROGEN FLOW ON**

STEP 1 SWITCH TO PANEL CSM 3
 STEP 2 HYDRO FLOW ON
 STEP 3 CHECK HYDRO GAUGE

ITEM 012 **BLOCK 1: INVERTER ON**


STEP 1 SWITCH TO PANEL CSM 3
 STEP 2 INVERTER ON

TAURUS LITTROW


FLIGHT PLAN

BLOCK 1 LAUNCH

ITEM: 013	BLOCK 1: BATTERIES A, B, C ON
	STEP 1 SWITCH TO PANEL CSM 3 STEP 2 BATTERY A,B,C ON STEP 3 CHECK GAUGES BATT. A,B,C

ITEM 014	BLOCK 1: OXYGEN FLOW
	STEP 1 SWITCH TO PANEL CSM 3 STEP 2 O2 FLOW ON STEP 3 CHECK O-2 GAUGE

ITEM 015	BLOCK 1: BACK-UP COMPUTER ON
	STEP 1 SWITCH TO PANEL CSM 2 STEP 2 BACK UP COMPUTER ON STEP 3 CHECK COMPUTER STATUS / CSM 2

ITEM 016	BLOCK 1: MAIN. A, C ELEC. BUS ON
	STEP 1 SWITCH TO PANEL CSM 3 STEP 2 MAIN BUS ON STEP 3 A BUS ON STEP 4 C BUS ON STEP 5 CHECK AMPS GAUGE STEP 6 CHECK AC GAUGE STEP 7 SWITCH TO CSM 2 CHECK SP5 DISPLAY

NOTE: B BUS CIRCUIT IS DEFAULTED ON LAUNCH
 PAD POWER IS CONNECTED UNTIL ITEM 22
 EVENT ONE IS COMPLETED

TAURUS LITTROW

FLIGHT PLAN

BLOCK 1 LAUNCH

ITEM 019 BLOCK 1: ENTER GIMBAL RATES



- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 SWITCH DISPLAY TO GIMBAL RATES
- STEP 3 ENTER X RATE DATA
- STEP 4 ENTER Y RATE DATA
- STEP 5 CHECK GIMBAL RATES CSM 2 DISPLAY

ITEM 020 BLOCK 1: SET GIMBAL

- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 SET GIMBAL ON

ITEM 021 BLOCK 1: MAIN BREAKER CLOSED



- STEP 1 SWITCH TO PANEL CSM 3
- STEP 2 MAIN BREAKER ON
- STEP 3 CHECK AC & DC GAUGES

ITEM 022 BLOCK 1: INTERNAL POWER SWITCH



- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 INT POWER ON
- STEP 3 SWITCH TO CSM 3
- STEP 4 CHECK AC DC & FUEL CELL 1,2,3 GAUGES

ITEM 023 BLOCK 1: CAUTION AND WARNING ON

- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 CAUTION/WARNING ON

ITEM 024 BLOCK 1: SATURN S1, S2, S4B ON

- STEP 1 SWITCH TO PANEL CSM 1
- STEP 2 SATURN S1, S2, S4B ON

TAURUS LITTROW

FLIGHT PLAN

BLOCK 1 LAUNCH

ITEM 025 **BLOCK 1: MASTER ARM ON**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 MASTER ENGINE ARM ON

ITEM 026 **BLOCK 1: LAUNCH ESCAPE ARM**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SAFETY OPEN
STEP 3 ARM ABORT SYSTEM

ITEM 027 **BLOCK 1: AUTO SEQUENCE START**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 AUTO SEQUENCE ON

ITEM 028 **BLOCK 1: S-1C JETT**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 S-1C JETT ON

ITEM 029 **BLOCK 1: LAUNCH ESCAPE JETTISON**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 LES JETT ON

ITEM 030 **BLOCK 1: S-2 JETT**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 S-2 JETT ON


TAURUS LITTROW

FLIGHT PLAN

BLOCK 2 TLI


ITEM 031

BLOCK 2: DEPLOY ANTENNA MAST

- 
- STEP 1 SWITCH TO PANEL CSM 2
 - STEP 2 DEPLOY ANTENNA MAST (OMNI)
 - STEP 3 SWITCH TO CSM 3
 - STEP 4 CHECK PRIMARY & SECONDARY FREQ

ITEM 032

BLOCK 2: TLI ENGINE GIMBAL RATES

- 
- STEP 1 SWITCH TO PANEL CSM 2
 - STEP 2 SWITCH DISPLAY TO GIMBAL RATES
 - STEP 3 ENTER X-RATE DATA
 - STEP 4 ENTER Y-RATE DATA
 - STEP 5 CHECK GNCS RATES DISPLAY

ITEM 033

BLOCK 2: SET GIMBAL DATA

- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 SET GIMBAL ON

ITEM 034

BLOCK 2: MASTER ARM ON

- STEP 1 SWITCH TO PANEL CSM 1
- STEP 2 MASTER ENGINE ARM ON

ITEM: 035

BLOCK 2: SET THRUST DURATION

- STEP 1 SWITCH TO PANEL CSM 1
- STEP 2 SET THRUST DURATION

TAURUS LITTROW

FLIGHT PLAN

BLOCK 2 TLI

ITEM 036 **BLOCK 2: SET ENGINE POWER**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET ENGINE THRUST

ITEM 037 **BLOCK 2: ARM S-4B**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 ARM S-4B

ITEM 038 **BLOCK 2: INITIATE AUTO SEQUENCE**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 AUTO SEQUENCE ON

ITEM 042 **BLOCK 2: ENABLE MAIN PUMP**

STEP 1 SWITCH TO PANEL CSM 3
STEP 2 SWITCH MAIN PUMP ON

ITEM 043 **BLOCK 2: ENABLE FUEL FLOW**

STEP 1 SWITCH TO PANEL CSM 3
STEP 2 SWITCH FUEL FLOW ON
STEP 3 CHECK ALL FUEL GAUGES

ITEM 044 **BLOCK 2: ENABLE RADAR SYSTEM**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SWITCH ON RADAR SYSTEM
STEP 3 SWITCH TO CSM 2 RADAR DISPLAY
STEP 4 ACQUIRE S4 B TARGET

TAURUS LITTROW

FLIGHT PLAN

BLOCK 2 TLI

ITEM 045 **BLOCK 2: PYRO ARM S4-B**


- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 OPEN SAFETY SHIELD
- STEP 3 PYRO ARM ON

ITEM 046 **BLOCK 2: S4-B JETTISON**


- STEP 1 SWITCH TO PANEL CSM 1
- STEP 2 SWITCH S4-B JETTISON
- STEP 3 SWITCH TO PANEL CSM 2
- STEP 4 SWITCH ON EXT CAM
- STEP 5 CHECK FOR GOOD S4-B JETTISON

ITEM 047 **BLOCK 2: ARM CSM RCS**

- STEP 1 SWITCH TO PANEL CSM 1
- STEP 2 SWITCH ON CSM RCS

ITEM 048 **BLOCK 2: ALIGN SIGHT ENABLE**


- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 SWITCH ON ALIGN SIGHT
- STEP 3 CHECK DISPLAY FOR RADICAL ON






ITEM 049 **BLOCK 2: AUTO SWITCH TO CSM 4**


- STEP 1 USE ALX CONTROL (MOUSE)
- STEP 2 USE JOYSTICK CONTROLLER FOR DOCK
- STEP 3 CHECK DISPLAY FOR LM TARGET RATES

TAURUS LITTROW

FLIGHT PLAN

BLOCK 2 TLI

ITEM 050	BLOCK 2: ARM JOYSTICK CONTROLLER
	STEP 1 SWITCH TO PANEL CSM 2 STEP 2 ARM JOYSTICK ON STEP 3 CHECK HAND CONTROLLER STATUS STEP 4 SELECT CSM 3 / CHECK QJADS
ITEM 051	BLOCK 2: ARM SPS ENGINE
	STEP 1 SWITCH TO PANEL CSM 1 STEP 2 SWITCH ON MAIN SPS STEP 3 CHECK ENGINE IGNITION STATUS
ITEM 053	BLOCK 2: ENTER GIMBAL RATES
	STEP 1 SWITCH TO PANEL CSM 2 STEP 2 SWITCH ON NPLT AND GIMBAL RATES STEP 3 ENTER GIMBAL RATES
ITEM 054	BLOCK 2: SET GIMBAL RATE
	STEP 1 SWITCH TO PANEL CSM 2 STEP 2 SELECT SET GIMBAL BUTTON STEP 3 SELECT GIMBAL RATES CHECK DISPLAY
ITEM 055	BLOCK 2: STABILIZATION CONTROL
	STEP 1 SWITCH TO PANEL CSM 2 STEP 2 SCS ON STEP 3 CHECK SPS DATA DISPLAY

TAURUS LITTROW

FLIGHT PLAN

BLOCK 2 TLI

ITEM 056 **BLOCK 2: ENGINE HEATER**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SPS ENGINE HEATER ON
STEP 3 CHECK SPS DATA DISPLAY

ITEM 057 **BLOCK 2: TANK HEATER**

STEP 1 SWITCH TO PANEL CSM 3
STEP 2 TANK HEATER ON
STEP 3 SWITCH TO CSM 2
STEP 4 CHECK SPS DATA DISPLAY

ITEM 058 **BLOCK 2: MASTER ARM ON**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 MASTER ENGINE ARM ON

ITEM 059 **BLOCK 2: SET THRUST DURATION**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET THRUST DURATION

ITEM 059a **BLOCK 2: SET THRUST PERCENT**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET THRUST PERCENT

ITEM 060 **BLOCK 2: SET ENGINE POWER**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET ENGINE THRUST

ITEM 061 **BLOCK 2: INITIATE AUTO SEQUENCE**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 AUTO SEQUENCE ON

TAURUS LITTROW

FLIGHT PLAN BLOCK 3 LM POWERUP & LOI

ITEM 062 **BLOCK 3:** LM HATCH OPEN

STEP 1 SWITCH TO PANEL CSM 3
STEP 2 PANEL LM 1 ON

ITEM 063 **BLOCK 3:** RADIO FREQUENCY SETTINGS

STEP 1 SWITCH TO PANEL LM 3
STEP 2 RADIO SYSTEM ON
STEP 3 SET PRIMARY FREQUENCY
STEP 4 SET PRIMARY CHANNEL

ITEM 064 **BLOCK 3:** RADIO FREQUENCY SETTINGS

STEP 1 SET SECONDARY FREQUENCY
STEP 2 SET SECONDARY CHANNEL
STEP 3 VOICE CHECK

ITEM 065 **BLOCK 3:** LUNAR MODULE SYSTEM

STEP 1 SWITCH TO PANEL LM 3
STEP 2 LM SYSTEM ON

ITEM 065a **BLOCK 3:** LM CABIN PRESSURE ON

STEP 1 SWITCH TO PANEL LM 2
STEP 2 CABIN PRESSURE ON

ITEM 066 **BLOCK 3:** PRIME & BACK-UP COMPUTER

STEP 1 SWITCH TO PANEL LM 2
STEP 2 PRIME COMP ON
STEP 3 BACK UP COMPUTER ON
STEP 4 SWITCH TO LM 3
STEP 5 CHECK COMPUTER DISPLAY READOUT

TAURUS LITTROW

FLIGHT PLAN BLOCK 3 LM POWERUP & LOI

ITEM 067 **BLOCK 3:** MAIN BREAKER CLOSED

STEP 1 SWITCH TO PANEL LM 3
STEP 2 MAIN BREAKER ON
STEP 3 CHECK ELECTRICAL STATUS GAUGES

ITEM 068 **BLOCK 3:** ENVIRONMENTAL CONTROL

STEP 1 SWITCH TO PANEL LM 2
STEP 2 ECS ON
STEP 3 CHECK CRYOGEN CS GAUGES

ITEM 069 **BLOCK 3:** INERTIAL MEASUREMENT UNIT

STEP 1 SWITCH TO PANEL LM 2
STEP 2 IMU ON

ITEM 070 **BLOCK 3:** CAUTION AND WARNING ON

STEP 1 SWITCH TO PANEL LM 3
STEP 2 CAUTION/WARNING ON

ITEM 071 **BLOCK 3:** GUIDANCE & NAVIGATION

STEP 1 SWITCH TO PANEL LM 3
STEP 2 GUIDANCE & NAVIGATION ON

ITEM 072 **BLOCK 3:** ENTER GIMBAL RATES

STEP 1 SWITCH TO PANEL LM 3
STEP 2 SWITCH ON INPLT
STEP 3 ENTER GIMBAL RATES

TAURUS LITTROW**FLIGHT PLAN BLOCK 3 LM POWERUP & LOI****ITEM 073 BLOCK 3: SET GIMBAL RATE**

STEP 1 SWITCH TO PANEL LM 2
STEP 2 SET GIMBAL ON
STEP 3 SWITCH TO LM 3
STEP 4 SELECT GIMBAL RATES CHECK DISPLAY

ITEM 074 BLOCK 3: SWITCH TO CSM

STEP 1 SWITCH TO PANEL LM 3
STEP 2 SWITCH TO PANEL CSM

ITEM 075 BLOCK 3: SET THRUST DURATION

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET THRUST DURATION

ITEM 076 BLOCK 3: SET ENGINE POWER

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET ENGINE THRUST

ITEM 077 BLOCK 3: ARM SPS ENGINE

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SWITCH ON MAIN SPS
STEP 3 CHECK COMPUTER IGNITION STATUS

TAURUS LITTROW

FLIGHT PLAN BLOCK 3 LM POWERUP & LOI

ITEM 078 **BLOCK 3:** ENTER GIMBAL RATES

- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 SWITCH ON INPUT
- STEP 3 ENTER GIMBAL RATES

ITEM 079 **BLOCK 3:** SET GIMBAL RATE

- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 SET GIMBAL ON

ITEM 080 **BLOCK 3:** MASTER ARM ON

- STEP 1 SWITCH TO PANEL CSM 1
- STEP 2 MASTER ENGINE ARM ON

ITEM 081 **BLOCK 3:** INITIATE AUTO SEQUENCE


- STEP 1 SWITCH TO PANEL CSM 1
- STEP 2 AUTO SEQUENCE ON

ITEM 082 **BLOCK 3:** LM BATTERY ACTIVATION


- STEP 1 SWITCH TO PANEL LM 3
- STEP 2 BATTERY A ON
- STEP 3 BATTERY B ON
- STEP 4 BATTERY C ON
- STEP 5 CHECK BATT A, B, & C GAUGES

TAURUS LITTROW


FLIGHT PLAN BLOCK 3 LM POWERUP & LOI

ITEM 083 **BLOCK 3:** LM FUEL SYSTEM ON



STEP 1 SWITCH TO PANEL LM 3
STEP 2 FUEL SYSTEM ON
STEP 3 ENGINE HEATER ON

ITEM 084 **BLOCK 3:** LM OXIDIZER FLOW ON


STEP 1 SWITCH TO PANEL LM 3
STEP 2 OXIDIZER FLOW ON
STEP 3 SELECT LM 2
STEP 4 CHECK OXID GAUGE

ITEM 084a **BLOCK 3:** LM HYDROGEN FLOW ON


STEP 1 SWITCH TO PANEL LM 2
STEP 2 HYDRO FLOW ON
STEP 3 SELECT LM 3
STEP 4 CHECK HYDRO GAUGE

ITEM 085 **BLOCK 3:** DESCENT & RCS TANKS


STEP 1 SWITCH TO PANEL LM 2
STEP 2 DESCENT TANK OPEN
STEP 3 RCS TANK OPEN
STEP 4 SELECT LM 1
STEP 5 CHECK DESCENT & RCS GAUGES

TAURUS LITTROW

FLIGHT PLAN

BLOCK 4 LUNAR ORBIT & LANDING

ITEM 086

BLOCK 3: MAIN / A, B & B BUS

- STEP 1 SWITCH TO PANEL LM 3
- STEP 2 MAIN BUS ON
- STEP 3 A BUS ON
- STEP 4 B BUS ON
- STEP 5 C BUS ON

ITEM 087

BLOCK 4: ARM SPS ENGINE

- STEP 1 SWITCH TO PANEL CSM 1
- STEP 2 SWITCH ON MAIN SPS
- STEP 3 CHECK COMPUTER IGNITION STATUS

ITEM 088

BLOCK 4: ENTER GIMBAL RATES

- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 SWITCH ON INPLT
- STEP 3 ENTER GIMBAL RATES

ITEM 089

BLOCK 4: SET GIMBAL RATE

- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 SET GIMBAL ON

ITEM 090

BLOCK 4: SET THRUST DURATION

- STEP 1 SWITCH TO PANEL CSM 1
- STEP 2 SET THRUST DURATION

ITEM 091

BLOCK 4: SET ENGINE POWER

- STEP 1 SWITCH TO PANEL CSM 1
- STEP 2 SET ENGINE THRUST

TAURUS LITTROW

FLIGHT PLAN

BLOCK 4 LUNAR ORBIT & LANDING

ITEM 092 **BLOCK 4: MASTER ARM / AUTO SEQ. ON**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 MASTER ARM ON
STEP 3 AUTO SEQUENCE ON

ITEM 093 **BLOCK 4: LM RADAR ON**

STEP 1 SWITCH TO PANEL LM 2
STEP 2 RADAR ON

ITEM 094 **BLOCK 4: LM FUEL PUMP**

STEP 1 SWITCH TO PANEL LM 2
STEP 2 FUEL PUMP ON

ITEM 095 **BLOCK 4: RCS ARM**

STEP 1 SWITCH TO PANEL LM 1
STEP 2 RCS ON

ITEM 096 **BLOCK 4: DESCENT STAGE ARM**

STEP 1 SWITCH TO PANEL LM 1
STEP 2 DESCENT STAGE ON

ITEM 097 **BLOCK 4: MASTER ARM ON**

STEP 1 SWITCH TO PANEL LM 1
STEP 2 MASTER ENGINE ARM ON

**TAURUS LITTROW
FLIGHT PLAN****BLOCK 4
LUNAR ORBIT & LANDING****ITEM 098 BLOCK 4: INITIATE AUTO SEQUENCE**

STEP 1 SWITCH TO PANEL LM 1

STEP 2 AUTO SEQUENCE ON

ITEM 099 BLOCK 4: ENGINE BREAKER ON

STEP 1 SWITCH TO PANEL LM 3

STEP 2 ENGINE BREAKER ON

ITEM 100 BLOCK 4: ARM JOYSTICK

STEP 1 SWITCH TO PANEL LM 2

STEP 2 ARM JOYSTICK

ITEM 101 BLOCK 4: HATCH CLOSED DOCK OFF

STEP 1 SWITCH TO PANEL LM 2

STEP 2 HATCH CLOSED (SWITCH ON)

STEP 3 DOCK OFF (UNDOCK)

ITEM: 102 BLOCK 4: QUAD PORT STARB ON

STEP 1 SWITCH TO PANEL LM 3

STEP 2 QUAD PORT ON

STEP 3 QUAD STARB ON

ITEM 103 BLOCK 4: QUAD FWD / REV ON

STEP 1 SWITCH TO PANEL LM 3

STEP 2 QUAD FWD / REV ON

ITEM 104 BLOCK 4: GEAR LOCK ON

STEP 1 SWITCH TO PANEL LM 2

STEP 2 LANDING GEAR LOCK

TAURUS LITTROW

FLIGHT PLAN

BLOCK 4 LUNAR ORBIT & LANDING

ITEM 105	BLOCK 4: ABORT ARM ON
	STEP 1 SWITCH TO PANEL LM 1 STEP 2 ABORT ARM ON
ITEM 106	BLOCK 4: PNGS ON
	STEP 1 SWITCH TO PANEL LM 3 STEP 2 PNGS ON
ITEM 107	BLOCK 4: HIGH BAND RADAR ON
	STEP 1 SWITCH TO PANEL LM 2 STEP 2 RADAR ON
ITEM 108	BLOCK 4: AGS ON
	STEP 1 SWITCH TO PANEL LM 3 STEP 2 AGS ON
ITEM 109	BLOCK 4: MASTER ARM OFF / RCS OFF
	STEP 1 SWITCH TO PANEL LM 1 STEP 2 MASTER ARM OFF STEP 3 RCS OFF

Check all electrical gauges and cryo tank pressures before beginning EVA procedures

Notify MCC regarding any anomalies

FOR LM POWER ON SEE POST LANDING
CUE CARD

TAURUS LITTROW

FLIGHT PLAN

BLOCK 6 LUNAR LIFTOFF & DOCKING

ITEM 125 **BLOCK 6:** ASCENT TANK OPEN

STEP 1 SWITCH TO PANEL LM 2

STEP 2 ASCENT TANK OPEN

ITEM 126 **BLOCK 6:** FUEL PUMP ON

STEP 1 SWITCH TO PANEL LM 2

STEP 2 FUEL PUMP ON

ITEM 127 **BLOCK 6:** ASCENT ENGINE / RCS ON

STEP 1 SWITCH TO PANEL LM 1

STEP 2 ASCENT ENGINE ARM

STEP 3 RCS ON

ITEM 128 **BLOCK 6:** ENTER GIMBAL RATES

STEP 1 SWITCH TO PANEL LM 3

STEP 2 SWITCH ON INPUT

STEP 3 ENTER GIMBAL RATES

ITEM 129 **BLOCK 6:** SET GIMBAL RATE

STEP 1 SWITCH TO PANEL LM 2

STEP 2 SET GIMBAL ON

ITEM 130 **BLOCK 6:** ARM JOYSTICK

STEP 1 SWITCH TO PANEL LM 2

STEP 2 ARM JOYSTICK

ITEM 131 **BLOCK 6:** QUAD PORT ON

STEP 1 SWITCH TO PANEL LM 3

STEP 2 QUAD PORT ON

TAURUS LITTROW**FLIGHT PLAN****BLOCK 6
LUNAR LIFTOFF & DOCKING****ITEM 132 BLOCK 6: QUAD STARB ON**

STEP 1 SWITCH TO PANEL LM 3

STEP 2 QUAD STARB ON

ITEM 133 BLOCK 6: QUAD FWD / REV ON

STEP 1 SWITCH TO PANEL LM 3

STEP 2 QUAD FWD / REV ON

ITEM 134 BLOCK 6: OXIDIZER FLOW ON

STEP 1 SWITCH TO PANEL LM 3

STEP 2 OXID FLOW ON

ITEM 135 BLOCK 6: HYDROGEN FLOW ON

STEP 1 SWITCH TO PANEL LM 3

STEP 2 HYDROGEN FLOW ON

ITEM 136 BLOCK 6: SET THRUST DURATION

STEP 1 SWITCH TO PANEL LM 1

STEP 2 SET THRUST DURATION

ITEM 137 BLOCK 6: SET ENGINE PERCENT

STEP 1 SWITCH TO PANEL LM 1

STEP 2 SET ENGINE THRUST

ITEM 138 BLOCK 6: MASTER ARM ON

STEP 1 SWITCH TO PANEL LM 1

STEP 2 MASTER ENGINE ARM ON

TAURUS LITTROW

FLIGHT PLAN

BLOCK 6 LUNAR LIFTOFF & DOCKING

ITEM: 139 **BLOCK 6: INITIATE AUTO SEQUENCE**

STEP 1 SWITCH TO PANEL LM 1
STEP 2 AUTO SEQUENCE ON

ITEM: 140 **BLOCK 6: LM RADAR ON**

STEP 1 SWITCH TO PANEL LM 3
STEP 2 RADAR ON

ITEM 141 **BLOCK 6: LM RADAR ON**

STEP 1 SWITCH TO PANEL LM 2
STEP 2 RADAR ON

ITEM 142 **BLOCK 6: TARGET RATES ON**

STEP 1 SWITCH TO PANEL LM 3
STEP 2 TARGET RATES ON

ITEM. 143 **BLOCK 6: LOW BAND RADAR ON**

STEP 1 SWITCH TO PANEL LM 2
STEP 2 LOW BAND ON

ITEM* 144 **BLOCK 6: LM AUTO PILOT ON**

STEP 1 SWITCH TO PANEL LM 3
STEP 2 AUTO PILOT ON

ITEM. 145 **BLOCK 6: LM ALIGN SIGHT ON**

STEP 1 SWITCH TO PANEL LM 2
STEP 2 ALIGN SIGHT ON

TAURUS LITTROW

FLIGHT PLAN

BLOCK 6
LUNAR LIFTOFF & DOCKINGITEM 146 **BLOCK 6:** ADJUST CABIN PRESSURE

STEP 1 SWITCH TO PANEL LM 2

STEP 2 DEPRESS CABIN PRESSURE

ITEM 147 **BLOCK 6:** SWITCH TO CSM

STEP 1 SWITCH TO PANEL LM 3

STEP 2 DEPRESS PANEL CSM

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TAURUS LITTROW

FLIGHT PLAN

BLOCK 7 TEI & REENTRY

ITEM 148 **BLOCK 7: SWITCH TO CSM**

STEP 1 SWITCH TO PANEL LM 3
STEP 2 CSM ON

ITEM 149 **BLOCK 7: PYRO ARM**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 OPEN SAFETY COVER
STEP 3 PYRO ARM ON

ITEM 150 **BLOCK 7: ENTER GIMBAL RATES**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SWITCH ON INPUT
STEP 3 ENTER GIMBAL RATES
STEP 4 CHECK GIMBAL RATES

ITEM 151 **BLOCK 7: SET GIMBAL RATE**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SET GIMBAL ON

ITEM 152 **BLOCK 7: ARM SPS ENGINE**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 ARM MAIN SPS

ITEM 153 **BLOCK 7: ARM CSM RCS**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 ARM CSM RCS

ITEM: 154 **BLOCK 7: ENABLE MAIN PUMP**

STEP 1 SWITCH TO PANEL CSM 3
STEP 2 MAIN PUMP ON

TAURUS LITTROW

FLIGHT PLAN

BLOCK 7 TEI & REENTRY

ITEM 155 **BLOCK 7: MASTER ARM**

STEP 1 SWITCH TO PANEL CSM 1

STEP 2 MASTER ARM ON

ITEM 156 **BLOCK 7: SET THRUST DURATION**

STEP 1 SWITCH TO PANEL CSM 1

STEP 2 SET THRUST DURAT ON

ITEM 157 **BLOCK 7: SET ENGINE POWER**

STEP 1 SWITCH TO PANEL CSM 1

STEP 2 SET ENGINE THRUST

ITEM 158 **BLOCK 7: INITIATE AUTO SEQUENCE**

STEP 1 SWITCH TO PANEL CSM 1

STEP 2 AUTO SEQUENCE ON

ITEM 159 **BLOCK 7: LM JETT**

STEP 1 SWITCH TO PANEL CSM 2

STEP 2 OPEN SAFETY COVER

STEP 3 LM JETT ON

ITEM 160 **BLOCK 7: A TANK & B TANK STIR**

STEP 1 SWITCH TO PANEL CSM 3

STEP 2 A TANK STIR

STEP 3 B TANK STIR

ITEM 161 **BLOCK 7: H 2-O STIR**

STEP 1 SWITCH TO PANEL CSM 3

STEP 2 H 2 O STIR ON

TAURUS LITTROW

FLIGHT PLAN

BLOCK 7 TEI & REENTRY

ITEM 162 **BLOCK 7: ENTER GIMBAL RATES**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SWITCH ON NPLT
STEP 3 ENTER GIMBAL RATES
STEP 4 CHECK GIMBAL RATES

ITEM 163 **BLOCK 7: SET GIMBAL RATE**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SET GIMBAL ON

ITEM 164 **BLOCK 7: SET THRUST DURATION**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET THRUST DURATION

ITEM 165 **BLOCK 7: SET ENGINE POWER**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET ENGINE THRUST

ITEM 166 **BLOCK 7: MASTER ARM**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 MASTER ARM ON

ITEM 167 **BLOCK 7: ARM SPS ENGINE**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 ARM MAIN SPS

ITEM 168 **BLOCK 7: ARM CSM RCS**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 ARM CSM RCS

TAURUS LITTROW

FLIGHT PLAN

BLOCK 7 TEI & REENTRY

ITEM 169 **BLOCK 7: INITIATE AUTO SEQUENCE**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 AUTO SEQUENCE ON

ITEM 170 **BLOCK 7: ENTER GIMBAL RATES**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SWITCH ON INPUT
STEP 3 ENTER GIMBAL RATES
STEP 4 CHECK GIMBAL RATES

ITEM 172 **BLOCK 7: SET GIMBAL RATE**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 SET GIMBAL ON

ITEM 173 **BLOCK 7: SET THRUST DURATION**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET THRUST DURATION

ITEM: 174 **BLOCK 7: SET ENGINE POWER**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 SET ENGINE THRUST

ITEM 175 **BLOCK 7: MASTER ARM**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 MASTER ARM ON

ITEM 176 **BLOCK 7: ARM SPS ENGINE & CSM RCS**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 ARM MAIN SPS
STEP 3 ARM CSM RCS

TAURUS LITTROW

FLIGHT PLAN

BLOCK 7 TEI & REENTRY

ITEM 177 BLOCK 7: INITIATE AUTO SEQUENCE

- STEP 1 SWITCH TO PANEL CSM 1
- STEP 2 AUTO SEQUENCE ON

ITEM 178 BLOCK 7: BUS TIE-LINE

- STEP 1 SWITCH TO PANEL CSM 3
- STEP 2 BUS TIE LINE ON

ITEM 179 BLOCK 7: BATTERY A, B, C ENABLE

- STEP 1 SWITCH TO PANEL CSM 3
- STEP 2 A BATTERY ON
- STEP 3 B BATTERY ON
- STEP 4 C BATTERY ON
- STEP 5 CHECK BATT GAUGES

ITEM 180 BLOCK 7: MAIN A, B, C BUS ENABLE

- STEP 1 SWITCH TO PANEL CSM 3
- STEP 2 A BUS ON
- STEP 3 B BUS ON
- STEP 4 C BUS ON
- STEP 5 MAIN BUS ON
- STEP 6 ALL ELECTRICAL GAUGES

ITEM 181 BLOCK 7: PYRO ARM

- STEP 1 SWITCH TO PANEL CSM 2
- STEP 2 OPEN SAFETY COVER
- STEP 3 PYRO ARM ON

ITEM 182 BLOCK 7: SPS JETT

- STEP 1 SWITCH TO PANEL CSM 1
- STEP 2 SPS JETT ON

TAURUS LITTROW

FLIGHT PLAN

BLOCK 7 TEI & REENTRY

ITEM 183 **BLOCK 7: MASTER ARM**

STEP 1 SW TCH TO PANEL CSM 1
STEP 2 MASTER ARM ON

ITEM 184 **BLOCK 7: ARM CSM RCS**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 ARM CSM RCS

ITEM 185 **BLOCK 7: ARM JOYSTICK**

STEP 1 SWITCH TO PANEL CSM 2
STEP 2 ARM JOYSTICK

ITEM 186 **BLOCK 7: ENTRY TRACK**

STEP 1 SWITCH TO PANEL CSM 1
STEP 2 ENTRY TRACK ON

ITEM 187 **BLOCK 7: CSM AUTO PILOT**

STEP 1 SW TCH TO PANEL CSM 2
STEP 2 AUTO P LOT ON

ITEM 188 **BLOCK 7: PYRO ARM**

STEP 1 SW TCH TO PANEL CSM 2
STEP 2 OPEN SAFETY COVER
STEP 3 PYRO ARM ON

ITEM 189 **BLOCK 7: CHUTES DEPLOY**

STEP 1 SW TCH TO PANEL CSM 2
STEP 2 CHUTES DEPLOY ON

ITEM 190 **BLOCK 7: WATER PACK / BEACON**

STEP 1 SW TCH TO PANEL CSM 2
STEP 2 WATER PACK / BEACON ON

MASTER
CAUTION & WARNING
INDICATORS

SECTION 11-1

JSC LUNAR GENERIC, REV K 3/15/73

TAURUS LITTROW

CAUTION & WARNING INDICATORS

ITEM C101 **BLOCK C&W.CSM 2: UNDERVOLT**



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK FUEL CELL INDICATORS
- STEP 3 CHECK BATTERY INDICATORS
- STEP 4 CHECK MAIN BREAKER CSM 3
- STEP 5 CHECK MAIN BUS CSM 3
- STEP 6 CHECK A, B, C BUS CSM 3
- STEP 7 CHECK SPS DATA CSM 2
- STEP 8 CHECK SYSTEM TEST CSM 2

ITEM C102 **BLOCK C&W.CSM 2: NAV FAULT**



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK GNCS RATES CSM 2
- STEP 3 CHECK G MBLR RATES CSM 2
- STEP 4 CHECK ALTO PILOT CSM 2

ITEM: C103 **BLOCK C&W.CSM 2: COMPUTER**



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK COMPUTER STATUS CSM 2
- STEP 3 CHECK PRIME COMPUTER ON CSM 2
- STEP 4 CHECK BACK UP COMPUTER ON CSM 2

ITEM C104 **BLOCK C&W.CSM 2: RADAR FAIL**




- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK RADAR DISPLAY CSM 2
- STEP 3 CHECK RADAR SYSTEMS ON CSM 2
- STEP 4 CHECK MAIN BUS CSM 3


TAURUS LITTROW

CAUTION & WARNING INDICATORS


ITEM C105 **BLOCK C&W.CSM 2: SYSTEM FIRE**

- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK ECS RATES CSM 2
 - STEP 3 CHECK SPS DATA CSM 2
 - STEP 4 CHECK COMPUTER STATUS CSM 2
 - STEP 5 CHECK FUEL CELL INDICATORS CSM 3
 - STEP 6 CHECK BATTERY INDICATORS CSM 3
 - STEP 7 CHECK MAIN BREAKER CSM 3
 - STEP 8 CHECK SPS BREAKER CSM 3

ITEM C106 **BLOCK C&W.CSM 2: LOGIC FAIL**

- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK COMPUTER STATUS CSM 2
 - STEP 3 CHECK PRIME COMPUTER ON CSM 2
 - STEP 4 CHECK BACK-UP COMPUTER ON CSM 2

ITEM C107 **BLOCK C&W.CSM 2: ENGINE FAIL**

- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK SPS DATA CSM 2
 - STEP 3 CHECK COMPUTER STATUS CSM 2
 - STEP 4 CHECK FUEL GAUGE CSM 1
 - STEP 5 CHECK ENGINE BREAKER CSM 3
 - STEP 6 CHECK FUEL FLOW CSM 3
 - STEP 7 CHECK OXIDIZER FLOW CSM 3
 - STEP 8 CHECK HELIUM FLOW CSM 3
 - STEP 9 CHECK HELIUM GAUGE CSM 3
 - STEP 10 CHECK OXIDIZER GAUGE CSM 3
 - STEP 11 CHECK MAIN PUMP CSM 3

ITEM C108 **BLOCK C&W.CSM 2: FUEL LOW**

- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK FUEL GAUGE CSM 1

TAURUS LITTROW

CAUTION & WARNING INDICATORS

ITEM C109 BLOCK C&W.CSM 2: MEMORY FAIL

- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK COMPUTER STATUS CSM 2
- STEP 3 CHECK PRIME COMPUTER ON CSM 2
- STEP 4 CHECK BACK UP COMPUTER ON CSM 2

ITEM C110 BLOCK C&W.CSM 2: 0-2 SYSTEM

- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK SPS DATA CSM 2
- STEP 3 CHECK ECS RATES CSM 2
- STEP 4 CHECK 0-2 FLOW CSM 3
- STEP 5 CHECK MAIN PUMP ON CSM 3
- STEP 6 CHECK 0-2 PUMP ON CSM 3

ITEM C111 BLOCK C&W.CSM 2: FUEL CELL 1 TEMP

- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK SPS DATA CSM 2
- STEP 3 CHECK ECS RATES CSM 2
- STEP 4 CHECK FUEL CELL 1 GAUGE CSM 3
- STEP 5 CHECK INVERTER ON CSM 3
- STEP 6 CHECK FUEL CELL 1 ON CSM 3
- STEP 7 CHECK MAIN BREAKER ON CSM 3
- STEP 8 CHECK A, B, C BUS ON CSM 3
- STEP 9 CHECK ECS ON CSM 2


ITEM C112 BLOCK C&W.CSM 2: RADIO FAIL

- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK COMPUTER STATUS CSM 2
- STEP 3 CHECK RADIO SYSTEMS CSM 2
- STEP 4 CHECK PRIME FREQUENCY CSM 3
- STEP 5 CHECK SECOND FREQUENCY CSM 3
- STEP 6 CHECK ANT. MAST ON CSM 2


TRAINING MISSION

CAUTION & WARNING INDICATORS


ITEM C113 **BLOCK C&W.CSM 2: RCS FAIL**

- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK RCS FUEL GAUGE CSM 1
 - STEP 3 CHECK COMP STATUS CSM 2
 - STEP 4 CHECK RCS FLOW CSM 3
 - STEP 5 CHECK MAIN PUMP ON CSM 3
 - STEP 6 CHECK ARM JOYSTICK ON CSM 2


ITEM C114 **BLOCK C&W.CSM 2: H2-O SYSTEM**

- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK ECS RATES CSM 2
 - STEP 3 CHECK H2-O PUMP CSM 3
 - STEP 4 CHECK H2-O STR CSM 3

ITEM C115 **BLOCK C&W.CSM 2: FUEL CELL 2 TEMP**

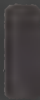
- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK SPS DATA CSM 2
 - STEP 3 CHECK ECS RATES CSM 2
 - STEP 4 CHECK FUEL CELL 2 GAUGE CSM 3
 - STEP 5 CHECK INVERTER ON CSM 3
 - STEP 6 CHECK F CELL 2 ON CSM 3
 - STEP 7 CHECK MAIN BREAKER ON CSM 3
 - STEP 8 CHECK A B C BUS ON CSM 3
 - STEP 9 CHECK ECS ON CSM 2

ITEM C116 **BLOCK C&W.CSM 2: S-BAND FAIL**

- 
- STEP 1 CLEAR MASTER ALARM CSM 2
 - STEP 2 CHECK COMPUTER STATUS CSM 2
 - STEP 3 CHECK RADIO SYSTEMS CSM 2
 - STEP 4 CHECK PRIME FREQUENCY CSM 3
 - STEP 5 CHECK SECOND FREQUENCY CSM 3
 - STEP 6 CHECK ANT MAST ON CSM 2

TAURUS LITTROW

CAUTION & WARNING INDICATORS

ITEM: C117 BLOCK C&W.CSM 2: INVERTER FAIL

- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK SPS DATA CSM 2
- STEP 3 CHECK INVERTER CSM 3
- STEP 4 CHECK MAIN BREAKER CSM 3
- STEP 5 CHECK A, B, C BUS CSM 3
- STEP 6 CHECK AMPS GAUGE CSM 3
- STEP 7 CHECK AC GAUGE CSM 3
- STEP 8 CHECK CSM BREAKER CSM 3
- STEP 9 SPS BREAKER CSM 3
- STEP 10 CHECK ANT MAST ON CSM 2

ITEM: C118 BLOCK C&W.CSM 2: MAIN PUMP

- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK MAIN PUMP CSM 3
- STEP 3 CHECK SPS DATA CSM 2
- STEP 4 CHECK MAIN BREAKER CSM 3
- STEP 5 CHECK CSM BREAKER CSM 3

ITEM: C119 BLOCK C&W.CSM 2: FUEL CELL 3 TEMP

- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK SPS DATA CSM 2
- STEP 3 CHECK ECS RATES CSM 2
- STEP 4 CHECK FUEL CELL 3 GAUGE CSM 3
- STEP 5 CHECK INVERTER ON CSM 3
- STEP 6 CHECK F CELL 3 ON CSM 3
- STEP 7 CHECK MAIN BREAKER ON CSM 3
- STEP 8 CHECK A, B, C BUS ON CSM 3
- STEP 9 CHECK ECS ON CSM 2

ITEM: C120 BLOCK C&W.CSM 2: TELEMETRY FAIL

- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK COMPUTER STATUS CSM 2
- STEP 3 CHECK RADIO SYSTEMS CSM 2
- STEP 4 CHECK ANT MAST ON CSM 2

TAURUS LITTROW

CAUTION & WARNING INDICATORS

ITEM C121 BLOCK C&W.CSM 3: BATTERY A LOW

- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK BATTERY A GAUGE CSM 3
- STEP 3 CHECK BATTERY A ON CSM 3
- STEP 4 CHECK INVERTER ON CSM 3
- STEP 5 CHECK FUEL CELL 1 CSM 3

ITEM C122 BLOCK C&W.CSM 3: BATTERY B LOW

- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK BATTERY B GAUGE CSM 3
- STEP 3 CHECK BATTERY B ON CSM 3
- STEP 4 CHECK INVERTER ON CSM 3
- STEP 5 CHECK FUEL CELL 2 CSM 3

ITEM C123 BLOCK C&W.CSM 3: BATTERY C LOW

- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK BATTERY C GAUGE CSM 3
- STEP 3 CHECK BATTERY C ON CSM 3
- STEP 4 CHECK INVERTER ON CSM 3
- STEP 5 CHECK FUEL CELL 3 CSM 3

ITEM C124 BLOCK C&W.CSM 3: HELIUM LOW

- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK HELIUM GAUGE CSM 3
- STEP 3 CHECK HELIUM FLOW ON CSM 3
- STEP 4 CHECK SPS DATA DISPLAY CSM 2
- STEP 5 CHECK ECS RATES CSM 2

ITEM C125 BLOCK C&W.CSM 3: OXIDIZER LOW

- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK OXIDIZER GAUGE CSM 3
- STEP 3 CHECK OXIDIZER FLOW ON CSM 3
- STEP 4 CHECK SPS DATA DISPLAY CSM 2
- STEP 5 CHECK ECS RATES CSM 2

TAURUS LITTROW

CAUTION & WARNING INDICATORS

ITEM C126 BLOCK C&W.CSM 3: FUEL CELL 1 FAIL



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK FUEL CELL 1 GAUGE CSM 3
- STEP 3 CHECK FUEL CELL 1 ON CSM 3
- STEP 4 CHECK INVERTER ON CSM 3
- STEP 5 CHECK SPS DATA CSM 2
- STEP 6 CHECK AMPS GAUGE CSM 3
- STEP 7 CHECK AC GAUGE CSM 3

ITEM C127 BLOCK C&W.CSM 3: FUEL CELL 2 FAIL



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK FUEL CELL 2 GAUGE CSM 3
- STEP 3 CHECK FUEL CELL 2 ON CSM 3
- STEP 4 CHECK INVERTER ON CSM 3
- STEP 5 CHECK SPS DATA CSM 2
- STEP 6 CHECK AMPS GAUGE CSM 3
- STEP 7 CHECK AC GAUGE CSM 3

ITEM C128 BLOCK C&W.CSM 3: FUEL CELL 3 FAIL



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK FUEL CELL 3 GAUGE CSM 3
- STEP 3 CHECK FUEL CELL 3 ON CSM 3
- STEP 4 CHECK INVERTER ON CSM 3
- STEP 5 CHECK SPS DATA CSM 2
- STEP 6 CHECK AMPS GAUGE CSM 3
- STEP 7 CHECK AC GAUGE CSM 3

ITEM C129 BLOCK C&W.CSM 3: A BUS UNDERVOLT



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK A BUS ON CSM 3
- STEP 3 CHECK FUEL CELL 1 ON CSM 3
- STEP 4 CHECK INVERTER ON CSM 3
- STEP 5 CHECK SPS DATA CSM 2
- STEP 6 CHECK AMPS GAUGE CSM 3
- STEP 7 CHECK AC GAUGE CSM 3

TAURUS LITTROW

CAUTION & WARNING INDICATORS

ITEM C130 **BLOCK C&W.CSM 3: B BUS UNDERVOLT**



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK B BUS ON CSM 3
- STEP 3 CHECK FUEL CELL 2 ON CSM 3
- STEP 4 CHECK INVERTER ON CSM 3
- STEP 5 CHECK SPS DATA CSM 2
- STEP 6 CHECK AMPS GAUGE CSM 3
- STEP 7 CHECK AC GAUGE CSM 3

ITEM C131 **BLOCK C&W.CSM 3: C BUS UNDERVOLT**



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK C BUS ON CSM 3
- STEP 3 CHECK FUEL CELL 3 ON CSM 3
- STEP 4 CHECK INVERTER ON CSM 3
- STEP 5 CHECK SPS DATA CSM 2
- STEP 6 CHECK AMPS GAUGE CSM 3
- STEP 7 CHECK AC GAUGE CSM 3

ITEM C132 **BLOCK C&W.CSM 3: TEMPATURE HIGH**



- STEP 1 CLEAR MASTER ALARM CSM 2
- STEP 2 CHECK SPS DATA DISPLAY CSM 2
- STEP 3 CHECK ECS RATES CSM 2

TAURUS LITTROW**CAUTION & WARNING INDICATORS****LUNAR MODULE SYSTEMS****ITEM C132 BLOCK C&W.LM1 UNDERVOLT**

- STEP 1 CLEAR MASTER ALARM LM 2
- STEP 2 CHECK A BUS ON LM 3
- STEP 3 CHECK B BUS ON LM 3
- STEP 4 CHECK BATTERY A, B ON LM 3
- STEP 5 CHECK INVERTER ON LM 3
- STEP 6 CHECK COMPUTER STATUS LM 3
- STEP 7 CHECK AMPS GAUGE LM 3
- STEP 8 CHECK VOLTS GAUGE LM 3
- STEP 9 CHECK DC GAUGE LM 3

ITEM C133 BLOCK C&W.LM 1: NAV FAULT

- STEP 1 CLEAR MASTER ALARM LM 2
- STEP 2 CHECK ASCENT OR DESCENT RATES LM 3
- STEP 3 CHECK GIMBLE RATES LM 3
- STEP 4 CHECK G/N LM 2

ITEM C134 BLOCK C&W.LM 1: COMPUTER

- STEP 1 CLEAR MASTER ALARM LM 2
- STEP 2 CHECK COMPUTER STATUS LM 3
- STEP 3 CHECK PR ME COMPUTER ON LM 2
- STEP 4 CHECK BACK UP COMPUTER ON LM 2
- STEP 5 CHECK AUTO PILOT LM 3

ITEM C135 BLOCK C&W.LM 1: HIGH ALARM

- STEP 1 CLEAR MASTER ALARM LM 2
- STEP 2 CHECK COMPUTER STATUS LM 3
- STEP 3 CHECK ML ON LM 2
- STEP 4 CHECK G/N ON LM 2
- STEP 5 CHECK RADAR ON LM 2
- STEP 6 SELECT HIGH OR LOW BAND RADAR LM 2

TAURUS LITTROW**CAUTION & WARNING INDICATORS****LUNAR MODULE SYSTEMS****ITEM C136 BLOCK C&W.LM 2: BATTERY A LOW**

- STEP 1 CLEAR MASTER ALARM LM 2
- STEP 2 CHECK BATTERY A GAUGE LM 3
- STEP 3 CHECK BATTERY A ON LM 3
- STEP 4 CHECK A BUS ON LM 3
- STEP 5 CHECK MAIN BREAKER LM 3

ITEM C137 BLOCK C&W.LM 2: BATTERY B LOW

- STEP 1 CLEAR MASTER ALARM LM 2
- STEP 2 CHECK BATTERY B GAUGE LM 3
- STEP 3 CHECK BATTERY B ON LM 3
- STEP 4 CHECK B BUS ON LM 3
- STEP 5 CHECK MAIN BREAKER LM 3

ITEM C138 BLOCK C&W.LM 2: BATTERY C LOW

- STEP 1 CLEAR MASTER ALARM LM 2
- STEP 2 CHECK BATTERY C GAUGE LM 3
- STEP 3 CHECK BATTERY C ON LM 3
- STEP 4 CHECK C BUS ON LM 3
- STEP 5 CHECK MAIN BREAKER LM 3

ITEM C139 BLOCK C&W.LM 2: FUEL PUMP

- STEP 1 CLEAR MASTER ALARM LM 2
- STEP 2 CHECK FUEL PUMP CSM 2
- STEP 3 CHECK FUEL SYSTEM LM 3
- STEP 4 CHECK FUEL GAUGES LM 1
- STEP 5 CHECK ALL FUEL TANKS LM 3

ITEM C140 BLOCK C&W.LM 2: RCS FAIL

- STEP 1 CLEAR MASTER ALARM LM 2
- STEP 2 CHECK FUEL PUMP CSM 2
- STEP 3 CHECK RCS FUEL TANK LM 2

TAURUS LITTROW**CAUTION & WARNING INDICATORS****LUNAR MODULE SYSTEMS****ITEM C141 BLOCK C&W.LM 2: MAIN BUS FAIL**

- STEP 1 CLEAR MASTER ALARM LM 2
- STEP 2 CHECK MAIN BUS LM 3
- STEP 3 CHECK MAIN BREAKER ON LM 3
- STEP 4 CHECK A. B. C BUS LM 3
- STEP 5 CHECK LM SYSTEM ON LM 3

ITEM C142 BLOCK C&W.LM 2: TELEMETRY FAIL

- STEP 1 CLEAR MASTER ALARM LM 2
- STEP 2 CHECK RADIO SYSTEM ON LM 2
- STEP 3 CHECK S-BAND SYSTEM ON LM 3

ITEM C143 BLOCK C&W.LM 2: SYSTEM FIRE

- STEP 1 CLEAR MASTER ALARM LM 2
- STEP 2 CHECK COMP STATUS LM 3
- STEP 3 CHECK CAUT ON & WARNING LM 1 & LM 2

ITEM C144 BLOCK C&W.LM 2: AUTO PILOT

- STEP 1 CLEAR MASTER ALARM LM 2
- STEP 2 CHECK COMP STATUS LM 3
- STEP 3 CHECK G/N LM 2
- STEP 4 CHECK PGNS ON LM 3
- STEP 5 CHECK AGS ON LM 3
- STEP 6 CHECK AUTO PILOT LM 3

ITEM C145 BLOCK C&W.LM 2: CABIN PRESS

- STEP 1 CLEAR MASTER ALARM LM 2
- STEP 2 CHECK CABIN PRESS ON LM 2
- STEP 3 CHECK O 2 GAUGE LM 2
- STEP 4 CHECK COMP STATUS LM 3

TAURUS LITTROW

CAUTION & WARNING INDICATORS

LUNAR MODULE SYSTEMS

ITEM: C146 BLOCK C&W.LM 2: RADIO FAIL

- STEP 1 CLEAR MASTER ALARM LM 2
- STEP 2 CHECK RADIO SYSTEM ON LM 3
- STEP 3 CHECK S BAND LM 3
- STEP 4 CHECK COMP STATUS LM 3

ITEM: C147 BLOCK C&W.LM 2: 0-2 SYSTEM

- STEP 1 CLEAR MASTER ALARM LM 2
- STEP 2 CHECK CABIN PRESS ON LM 2
- STEP 3 CHECK 0-2 GAUGE LM 2
- STEP 4 CHECK 0-2 FLOW ON LM 3

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APOLLO 18 CM & LM SOLUTIONS

SECTION 12-1
JSC LUNAR GENERIC, REV K 3/15/73

TAURUS LITTROW

COMMAND MODULE SOLUTIONS

ITEM. P501 **BLOCK:** SATURN S-1C ENGINE FAILURE

- STEP 1 CHECK MASTER ALARM & C&W CSM 2 3
- STEP 2 CHECK SATURN ENGINE STATUS CSM 1
- STEP 3 CHECK GIMBAL RATES CSM 2
- STEP 4 CHECK ASCENT RATE CSM 1
- STEP 5 CONSULT MCC
- STEP 6 JETTISON S-1C FAILED STAGE
- STEP 7 IF FAILURE CONTINUES LES JETT CSM 1

ITEM P502 **BLOCK:** SATURN S-II ENGINE FAILURE

- STEP 1 CHECK MASTER ALARM & C&W CSM 2 3
- STEP 2 CHECK SATURN ENGINE STATUS CSM 1
- STEP 3 CHECK GIMBAL RATES CSM 2
- STEP 4 CHECK ASCENT RATE CSM 1
- STEP 5 CONSULT MCC
- STEP 6 JETTISON S-II FAILED STAGE
- STEP 7 IF FAILURE CONTINUES LES JETT CSM 1

ITEM. P503 **BLOCK:** SATURN S-4B ENGINE FAILURE

- STEP 1 CHECK MASTER ALARM & C&W CSM 2 3
- STEP 2 CHECK SATURN ENGINE STATUS CSM 1
- STEP 3 CHECK GIMBAL RATES CSM 2
- STEP 4 CHECK ASCENT RATE CSM 1
- STEP 5 CONSULT MCC
- STEP 6 JETTISON S-4B FAILED STAGE
- STEP 7 IF FAILURE CONTINUES LES JETT CSM 1


ITEM P504 **BLOCK:** SYSTEM FIRE

- STEP 1 CHECK MASTER ALARM & C&W CSM 2 3
- STEP 2 CHECK SPS DATA CSM 2
- STEP 3 CHECK ECS RATES CSM 2
- STEP 4 CONSULT MCC
- STEP 5 MAIN BREAKER OFF CSM 3
- STEP 6 MAIN BUS OFF CSM 3

TAURUS LITTROW

COMMAND MODULE SOLUTIONS


ITEM P505 BLOCK: ASCENT TRACK FAULT

- 
- STEP 1 CHECK MASTER ALARM & C&W CSM 2
 - STEP 2 CHECK ASCENT TRACK DATA CSM 1
 - STEP 3 CHECK SLOPE INDICATOR CSM 1
 - STEP 4 CHECK GIMBAL RATES CSM 2
 - STEP 5 CHECK BALL CSM 1
 - STEP 6 ARM JOYSTICK CSM 2
 - STEP 7 MANUAL FIRE CSM 1
 - STEP 8 MONITOR SLOPE TRACK CSM 3


ITEM P506 BLOCK: S-1C JETTISON

- 
- STEP 1 CHECK THRUST DURATION CSM 1
 - STEP 2 CHECK SATURN ENGINE STATUS CSM 1
 - STEP 3 WHEN ENGINE CUTOFF / S-1C JETT CSM 1
 - STEP 4 CONSULT MCC


ITEM P507 BLOCK: S-2 JETTISON

- 
- STEP 1 CHECK THRUST DURATION CSM 1
 - STEP 2 CHECK SATURN ENGINE STATUS CSM 1
 - STEP 3 WHEN ENGINE CUTOFF / S-2 JETT CSM 1
 - STEP 4 CONSULT MCC

ITEM P508 BLOCK: S-4B JETTISON

- 
- STEP 1 CHECK THRUST DURATION CSM 1
 - STEP 2 CHECK SATURN ENGINE STATUS CSM 1
 - STEP 3 WHEN ENGINE CUTOFF / S-4B JETT CSM 1
 - STEP 4 CONSULT MCC


ITEM P509 BLOCK: LES JETTISON

- 
- STEP 1 CHECK COMPUTER STATUS CSM 2
 - STEP 2 CONFIRM WITH MCC
 - STEP 3 LAUNCH ESCAPE ON CSM 1


TAURUS LITTROW

COMMAND MODULE SOLUTIONS


ITEM P510 **BLOCK:** FUEL CELL 1 SHUT DOWN

- 
- STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
 - STEP 2 BUST E LINE ON CSM 3
 - STEP 3 A BJS OFF CSM 3
 - STEP 4 B BJS ON CSM 3
 - STEP 5 FUEL CELL 1 OFF CSM 3
 - STEP 6 CHECK ECS RATES CSM 2
 - STEP 7 CHECK AMPS GAUGE CSM 3
 - STEP 8 CHECK AC GAUGE CSM 3
 - STEP 9 CHECK CELL 1 GAUGE CSM 3

ITEM P511 **BLOCK:** TWO FUEL CELL SHUT DOWN

- 
- STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
 - STEP 2 BUST E LINE ON CSM 3
 - STEP 3 B BJS OFF CSM 3
 - STEP 4 A BJS ON CSM 3
 - STEP 5 FUEL CELL 2 OFF CSM 3
 - STEP 6 CHECK ECS RATES CSM 2
 - STEP 7 CHECK AMPS GAUGE CSM 3
 - STEP 8 CHECK AC GAUGE CSM 3
 - STEP 9 CHECK CELL 2 GAUGE CSM 3


ITEM P512 **BLOCK:** FUEL CELL 2 SHUT DOWN

- 
- STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
 - STEP 2 BUST E LINE ON CSM 3
 - STEP 3 C BJS OFF CSM 3
 - STEP 4 A BJS ON CSM 3
 - STEP 5 FUEL CELL 3 OFF CSM 3
 - STEP 6 CHECK ECS RATES CSM 2
 - STEP 7 CHECK AMPS GAUGE CSM 3
 - STEP 8 CHECK AC GAUGE CSM 3
 - STEP 9 CHECK CELL 3 GAUGE CSM 3


TAURUS LITTROW

COMMAND MODULE SOLUTIONS


ITEM P513 **BLOCK:** FUEL CELL 1 & 2 SHUT DOWN

- 
- STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
 - STEP 2 BUS TIE LINE ON CSM 3
 - STEP 3 A BUS OFF CSM 3
 - STEP 4 B BUS OFF CSM 3
 - STEP 5 C BUS ON CSM 3
 - STEP 6 FUEL CELL 1 OFF CSM 3
 - STEP 7 FUEL CELL 2 OFF CSM 3
 - STEP 8 CHECK ECS RATES CSM 2
 - STEP 9 CHECK CELL 1 & 2 GAUGE CSM 3
 - STEP 10 CHECK DC GAUGE
 - STEP 11 CHECK CELL 1 & 2 GAUGE CSM 3

ITEM P514 **BLOCK:** FUEL CELL 1, 2 & 3 SHUT DOWN

- 
- STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
 - STEP 2 BUS TIE LINE ON CSM 3
 - STEP 3 A BUS OFF CSM 3
 - STEP 4 B BUS OFF CSM 3
 - STEP 5 C BUS OFF CSM 3
 - STEP 6 FUEL CELL 1 OFF CSM 3
 - STEP 7 FUEL CELL 2 OFF CSM 3
 - STEP 8 FUEL CELL 3 OFF CSM 3
 - STEP 9 CHECK ECS RATES CSM 2
 - STEP 10 CHECK CELL 1, 2 & 3 GAUGES CSM 3
 - STEP 11 CHECK BATT 1, 2 & 3 GAUGES CSM 3
 - STEP 12 CHECK DC GAUGE CSM 3

ITEM P515 **BLOCK:** MU FAIL

- 
- STEP 1 CHECK GNCS DATA CSM 2
 - STEP 2 IMU OFF CSM 2
 - STEP 3 EXTERNAL CAMERA ON CSM 2
 - STEP 4 STAR FINDER ON CSM 2
 - STEP 5 RCS OR MAIN SPS ON
 - STEP 6 ARM JOYSTICK ON
 - STEP 7 USE RCS/SPS THRUST TO ALIGN COURSE

TAURUS LITTROW

COMMAND MODULE SOLUTIONS

ITEM P516 **BLOCK:** S-4B ENGINE FAIL



- STEP 1 CHECK GNCS DATA CSM 2
- STEP 2 CHECK COMP STATUS CSM 2
- STEP 3 CHECK S-4B FUEL GAUGE CSM 2
- STEP 4 ARM S1C S2 S4B CSM 1
- STEP 5 MANUAL FIRE ON CSM 1
- STEP 6 ENGINE FAILS (ABORT MISSION)
- STEP 7 S4B JETT ON
- STEP 8 SEE MISSION ABORT BLOCK TL

ITEM P517 **BLOCK:** COMPUTER FAIL



- STEP 1 CHECK COMPUTER STATUS CSM 2
- STEP 2 PRIME COMPUTER RESET OFF/ON CSM 2
- STEP 3 (IF RESET FAILS) PRIME COMP OFF CSM 2
- STEP 4 BACK-UP COMPUTER OFF/ON CSM 2
- STEP 5 (IF RESET FAILS) BK-UP COMP OFF
- STEP 6 CONSULT MCC

ITEM: P518 **BLOCK:** RCS FAIL



- STEP 1 CHECK SPS STATUS CSM 2
- STEP 2 CHECK COMP STATUS CSM 2
- STEP 3 CHECK RCS FUEL GAUGE CSM 1
- STEP 4 RESET RCS FUEL FLOW CSM 3
- STEP 5 RESET ARM JOYSTICK CSM 2
- STEP 6 CONSULT MCC

ITEM P519 **BLOCK:** SPS ENGINE FAIL




- STEP 1 CHECK SPS STATUS CSM 2
- STEP 2 CHECK COMP STATUS CSM 2
- STEP 3 CHECK SPS FUEL GAUGE CSM 1
- STEP 4 RESET FUEL FLOW CSM 3
- STEP 5 RESET ENGINE BREAKER CSM 3
- STEP 6 RESET MAIN SPS ENGINE CSM 1
- STEP 7 CONSULT MCC

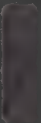
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COMMAND MODULE SOLUTIONS


ITEM P520 **BLOCK: BALL FAILURE**

- 
- STEP 1 CHECK SPS STATUS CSM 2
 - STEP 2 CHECK GNCS RATES CSM 2
 - STEP 3 RESET MU SYSTEM CSM 2
 - STEP 4 CONSULT MCC

ITEM P521 **BLOCK: BATTERY A SHUT DOWN**

- 
- STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
 - STEP 2 BUS TIE-LINE ON CSM 3
 - STEP 3 A BUS OFF CSM 3
 - STEP 4 B BUS ON CSM 3
 - STEP 5 C BUS ON CSM 3
 - STEP 6 BATTERY A OFF CSM 3
 - STEP 7 BATTERY B ON CSM 3
 - STEP 8 BATTERY C ON CSM 3
 - STEP 9 CHECK ECS RATES CSM 2
 - STEP 10 CHECK BATT 1 GAUGE CSM 3
 - STEP 11 CHECK BATT 2 & 3 GAUGES CSM 3
 - STEP 12 CHECK DC GAUGE CSM 3

ITEM P523 **BLOCK: BATTERY B SHUT DOWN**

- 
- STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
 - STEP 2 BUS TIE LINE ON CSM 3
 - STEP 3 A BUS ON CSM 3
 - STEP 4 B BUS OFF CSM 3
 - STEP 5 C BUS ON CSM 3
 - STEP 6 BATTERY A ON CSM 3
 - STEP 7 BATTERY B OFF CSM 3
 - STEP 8 BATTERY C ON CSM 3
 - STEP 9 CHECK ECS RATES CSM 2
 - STEP 10 CHECK BATT B GAUGE CSM 3
 - STEP 11 CHECK BATT A & C GAUGES CSM 3
 - STEP 12 CHECK DC GAUGE CSM 3

TAURUS LITTROW

COMMAND MODULE SOLUTIONS

ITEM P524 BLOCK: BATTERY C SHUT DOWN

STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
 STEP 2 BUS TIE LINE ON CSM 3
 STEP 3 A BUS ON CSM 3
 STEP 4 B BUS ON CSM 3
 STEP 5 C BUS OFF CSM 3
 STEP 6 BATTERY A ON CSM 3
 STEP 7 BATTERY B ON CSM 3
 STEP 8 BATTERY C OFF CSM 3
 STEP 9 CHECK ECS RATES CSM 2
 STEP 10 CHECK BATT C GAUGE CSM 3
 STEP 11 CHECK BATT A & B GAUGES CSM 3
 STEP 12 CHECK DC GAUGE CSM 3

ITEM P525 BLOCK: BATTERY A, B & C SHUT DOWN

STEP 1 CHECK SPS DATA CSM 2 (SEE NOTES)
 STEP 2 BUS TIE LINE ON CSM 3
 STEP 3 A BUS OFF CSM 3
 STEP 4 B BUS OFF CSM 3
 STEP 5 C BUS OFF CSM 3
 STEP 6 BATTERY A OFF CSM 3
 STEP 7 BATTERY B OFF CSM 3
 STEP 8 BATTERY C OFF CSM 3
 STEP 9 CHECK ECS RATES CSM 2
 STEP 10 CHECK BATT A, B & C GAUGES
 STEP 11 START BACK UP BATT (see item p526)
 STEP 12 CHECK DC GAUGE CSM 3


ITEM P526 BLOCK: BACK-UP BATTERY

STEP 1 CHECK SPS STATUS CSM 2
 STEP 2 MAIN BUS TIE LINE ON CSM 3
 STEP 3 A, B, C BUS ON CSM 3
 STEP 4 BK UP BATT ON CSM 2
 STEP 5 CHECK DC GAUGE CSM 3
 STEP 6 CONSULT MCC


TAURUS LITTROW

COMMAND MODULE SOLUTIONS


ITEM P527 **BLOCK:** CSM SYSTEM FAILURE

- 
- STEP 1 BACK UP BATTERY ON CSM 2
 - STEP 2 CSM SYSTEM (RESTART) CSM 2
 - STEP 3 DATA DISPLAY ON CSM 2
 - STEP 4 RADIO SYSTEM (RESET) CSM 2
 - STEP 5 BATTERY (RESTART) (see BLOCK 1)
 - STEP 6 CSM BREAKER (RESET) CSM 3
 - STEP 7 ECS SYSTEM (RESTART) CSM 2
 - STEP 8 CONSULT MCC


ITEM P528 **BLOCK:** COMPUTER DISPLAY FAILURE

- 
- STEP 1 CHECK COMP STATUS CSM 2
 - STEP 2 PRIME COMPUTER (RESTART) CSM 2
 - STEP 3 BACK UP COMPUTER (RESTART) CSM 2
 - STEP 4 CSM SYSTEM (RESET) CSM 3
 - STEP 5 CONSULT MCC

ITEM P528 **BLOCK:** ENGINE HEATER FAIL

- 
- STEP 1 CHECK SPS DATA CSM 2
 - STEP 2 ENGINE HEATER (RESTART) CSM 2
 - STEP 3 ROLL CSM PROGRAM 4 RVS PER MIN.
 - STEP 4 STR H 20 TANKS
 - STEP 5 STR A & B TANKS CSM 3
 - STEP 6 CONSULT MCC

ITEM P529 **BLOCK:** SPS SYSTEM FAILURE

- 
- STEP 1 BACK UP BATTERY ON CSM 2
 - STEP 2 CSM SYSTEM (RESTART) CSM 2
 - STEP 3 DATA DISPLAY ON CSM 2
 - STEP 4 RADIO SYSTEM (RESET) CSM 2
 - STEP 5 BATTERY (RESTART) (see BLOCK 1)
 - STEP 6 SPS BREAKER (RESET) CSM 3
 - STEP 7 ECS SYSTEM (RESTART) CSM 2
 - STEP 8 CONSULT MCC

TAURUS LITTROW

COMMAND MODULE SOLUTIONS

ITEM P601 BLOCK: LM DESCENT ENGINE FAILURE

STEP 1 CHECK MASTER ALARM & C&W LM 1 2
 STEP 2 CHECK LM DESCENT ENGINE STATUS LM 1
 STEP 3 CHECK GIMBAL RATES LM 3
 STEP 4 (RESET) ENGINE BREAKER LM 3
 STEP 5 CHECK DESCENT FUEL GAUGE LM 1
 STEP 6 RESTART FUEL PUMP LM 3
 STEP 7 (RESET) FUEL SYSTEM LM 3
 STEP 8 CONSULT MCC
 STEP 9 IF FAILURE CONTINUES, ABORT LANDING

ITEM P602 BLOCK: LM ASCENT ENGINE FAILURE

STEP 1 CHECK MASTER ALARM & C&W LM 1 2
 STEP 2 CHECK LM ASCENT ENGINE STATUS LM 1
 STEP 3 CHECK GIMBAL RATES LM 3
 STEP 4 (RESET) ENGINE BREAKER LM 3
 STEP 5 CHECK ASCENT FUEL GAUGE LM 1
 STEP 6 RESTART FUEL PUMP LM 3
 STEP 7 (RESET) FUEL SYSTEM LM 3
 STEP 8 CONSULT MCC

ITEM P603 BLOCK: ENGINE HEATER FAIL

STEP 1 CHECK COMP STATUS LM 3
 STEP 2 ENGINE HEATER (RESTART) LM 3
 STEP 3 (RESET) LM SYSTEM LM 3
 STEP 4 TANK STIR LM 3
 STEP 5 CONSULT MCC

ITEM P604 BLOCK: LM SYSTEM FAILURE

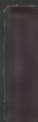
STEP 1 BACK UP BATTERY ON LM 3
 STEP 2 LM SYSTEM (RESTART) LM 3
 STEP 3 RADIO SYSTEM (RESET) LM 3
 STEP 4 BATTERY (RESTART) (see BLOCK 3)
 STEP 5 MAIN BREAKER (RESET) LM 3
 STEP 6 CONSULT MCC

TAURUS LITTROW

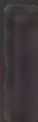
COMMAND MODULE SOLUTIONS

ITEM: P605 BLOCK: 8 BALL FAILURE

- STEP 1 CHECK COMP STATUS LM 3
- STEP 2 CHECK ASCENT/DESCENT RATES LM 3
- STEP 3 (RESET) IMU SYSTEM LM 2
- STEP 4 CONSULT MCC

ITEM: P606 BLOCK: BATTERY A SHUT DOWN

- STEP 1 CHECK COMPUTER STATUS LM 3
- STEP 2 MAIN BUS TIE LINE ON LM 3
- STEP 3 A BUS OFF LM 3
- STEP 4 B BUS ON LM 3
- STEP 5 C BUS ON LM 3
- STEP 6 BATTERY A OFF LM 3
- STEP 7 BATTERY B ON LM 3
- STEP 8 BATTERY C ON LM 3
- STEP 9 CHECK VOLTS GAUGE LM 3
- STEP 10 CHECK BATT A GAUGE LM 3
- STEP 11 CHECK BATT B & C GAUGES LM 3
- STEP 12 CHECK DC GAUGE LM 3

ITEM: P607 BLOCK: BATTERY B SHUT DOWN

- STEP 1 CHECK COMPUTER STATUS LM 3
- STEP 2 MAIN BUS TIE-LINE ON LM 3
- STEP 3 A BUS OFF LM 3
- STEP 4 B BUS ON LM 3
- STEP 5 C BUS ON LM 3
- STEP 6 BATTERY A ON LM 3
- STEP 7 BATTERY B OFF LM 3
- STEP 8 BATTERY C ON LM 3
- STEP 9 CHECK VOLTS GAUGE LM 3
- STEP 10 CHECK BATT B GAUGE LM 3
- STEP 11 CHECK BATT A & C GAUGES LM 3
- STEP 12 CHECK DC GAUGE LM 3

TAURUS LITTROW

COMMAND MODULE SOLUTIONS

ITEM P608 BLOCK: BATTERY C SHUT DOWN

- STEP 1 CHECK COMPUTER STATUS LM 3
- STEP 2 MAIN BUS T E LINE ON LM 3
- STEP 3 A BUS ON LM 3
- STEP 4 B BUS ON LM 3
- STEP 5 C BUS OFF LM 3
- STEP 6 BATTERY A ON LM 3
- STEP 7 BATTERY B ON LM 3
- STEP 8 BATTERY C OFF LM 3
- STEP 9 CHECK VOLTS GAUGE LM 3
- STEP 10 CHECK BATT C GAUGE LM 3
- STEP 11 CHECK BATT A & B GAUGES LM 3
- STEP 12 CHECK DC GAUGE LM 3

ITEM P609 BLOCK: BATTERY A, B & C SHUT DOWN

- STEP 1 CHECK COMP STATUS LM 3
- STEP 2 MAIN BUS T E LINE ON CSM 3
- STEP 3 A BUS OFF LM 3
- STEP 4 B BUS OFF LM 3
- STEP 5 C BUS OFF LM 3
- STEP 6 BATTERY A OFF LM 3
- STEP 7 BATTERY B OFF LM 3
- STEP 8 BATTERY C OFF LM 3
- STEP 9 CHECK VOLTS GAUGE LM 3
- STEP 10 CHECK BATT A, B & C GAUGES
- STEP 11, START BACK UP BATT (see item p.610)
- STEP 12 CHECK DC GAUGE LM 3

ITEM P610 BLOCK: BACK-UP BATTERY

- STEP 1 CHECK COMP STATUS CSM 2
- STEP 2 BK BATT ON LM 3
- STEP 3 MN BUS T E LINE ON LM 3
- STEP 4 A, B, C BUS ON LM 3
- STEP 5 CHECK DC GAUGE LM 3
- STEP 6 CONSULT MCC

TAURUS LITTROW

COMMAND MODULE SOLUTIONS

ITEM P611 **BLOCK: COMPUTER FAIL**

- STEP 1 CHECK COMPUTER STATUS LM 2
- STEP 2 PRIME COMPUTER RESET OFF/ON LM 2
- STEP 3 (F RESET FAILS) PRIME COMP OFF LM 2
- STEP 4 BACK-UP COMPUTER OFF/ON LM 2
- STEP 5 (F RESET FAILS, BK UP COMP OFF
- STEP 6 CONSULT MCC

ITEM P612 **BLOCK: RCS FAIL**

- STEP 1 CHECK COMPUTER STATUS LM 3
- STEP 2 CHECK RCS FUEL GAUGE LM 1
- STEP 3 RESET RCS TANK LM 2
- STEP 4 RESET ARM JOYSTICK LM 2
- STEP 5 CONSULT MCC

ITEM P613 **BLOCK: SYSTEM FIRE**

- STEP 1 CHECK MASTER ALARM & C&W LM 1, 2
- STEP 2 CHECK COMPUTER STATUS LM 3
- STEP 3 CONSULT MCC
- STEP 4 MAIN BREAKER OFF LM 3
- STEP 5 MAIN BUS OFF LM 3

ITEM P614 **BLOCK: NO LANDING GEAR LOCK**

- STEP 1 CHECK MASTER ALARM & C&W LM 1, 2
- STEP 2 (RESET) GEAR LOCK LM 2
- STEP 3 CONSULT MCC
- STEP 4 (RECYCLE) MAIN BUS LM 3
- STEP 5 CONSULT MCC

ITEM P615 **BLOCK: LOW RCS (ASCENT) FUEL**

- STEP 2 RCS TANK OPEN LM 2
- STEP 3 RCS TIE-LINE ON LM 2
- STEP 4 (RESTART) MAIN FUEL PUMP LM 2

APOLLO 18
CUE CARDS

SECTION 13
JSC LUNAR GENERIC, REV K 3/15/73

TAURUS LITTROW

MISSION TIPS

LM DOCKING (TIME ALLOWED: 120 SECONDS)
WHEN DOCKING WITH THE LUNAR MODULE, USE
CSM COAS (crew optical ALIGN SIGHT) CENTER LM
DOCKING TARGET IN COAS. DO NOT THRUST IN WITH
GREATER THAN .1 FOOT PER SECOND DELTA V.

WAIT FOR PROBE CONTACT THEN RETRACT LM SLOWLY.
PILOTS MUST USE CSM 3 BUTTON TO RETURN TO PANELS.

LUNAR LANDING (TIME ALLOWED: 110 SECONDS)
RADAR / COMPUTER CONTROL MUST BE USED WHEN LANDING.
MISSION CONTROL WILL GIVE FINAL APOLLO 17 SITE COORDINATES.

LANDING TIPS

LISTEN TO ALL MCC CALLS.

LOOK FOR COMPUTER GENERATED (RED) SITE INDICATOR.

WATCH FUEL AND ALTITUDE STATUS.

LAND IN FRONT OF RTT 301 DISH.

TARGET INDICATOR SHOULD READ 005 OR LESS FOR
SUCCESSFUL RTT 301 CAPTURE.

CSM DOCKING (TIME ALLOWED: 100 SECONDS)
CENTER THE CSM DOCKING PROBE IN THE COAS FOR
PROPER DOCKING ANGLE.

LM CLOSE RATE MUST NOT EXCEED .1 FPS.

REENTRY (TIME ALLOWED: 130 SECONDS)
WATCH CENTER OF GRAVITY. KEEP RCS USE TO MINIMUM.
DO NOT OVER COMPENSATE.

TAURUS LITTROW

SAT. V LAUNCH SEQUENCE

CUE CARD

EVENT	TIME
1. S-1C ENGINE IGNITION	MINUS 05
2. ALL ENGINES RUNNING	+ 0 SEC
3. FIRST MOTION	+ 1 SEC
4. LIFTOFF	+ 3 SEC
5. TOWER CLEAR	+ 5 SEC
6. HOUSTON CONTROLS	+ 6 SEC
7. ROLL PROGRAM	+ 7 SEC
8. PITCH PROGRAM	+ 10 SEC
9. MAXIMUM DYNAMIC PRESSURE	+ 25 SEC
10. S1-C ENGINE SHUTDOWN	+145 SEC
11. S1-C STAGE SEPARATION	+148 SEC
12. S-II IGNITION	+150 SEC
13. S-II ENGINE SHUTDOWN	+305 SEC
14. S-II SEPARATION	+307 SEC
15. S-4B IGNITION	+310 SEC
16. S-4B 1ST CUTOFF	+355 SEC
17. EARTH ORBIT	+400 SEC

DO NOT ENGAGE SYSTEMS BEFORE LAUNCH DIRECTOR CALLS. TERMINATION OF LAUNCH WILL OCCUR

NOTE. ALL EVENTS ARE BOTH ONBOARD COMPUTER ASSISTED AND /OR MANUALLY ACCOMPLISHED
LISTEN FOR MCC CUES AND AUDIO ALERTS

TAURUS LITTROW

LUNAR LANDING

CUE CARD

EVENT	TIME
1. RCS THRUST AWAY FROM CSM	- 260 SEC
2. LM DESCENT ENGINE IGNITION	- 250 SEC
3. LM RADAR ON	- 240 SEC
4. ABORT GUIDANCE ON	- 230 SEC
5. POWER DESCENT INSERTION	- 220 SEC
6. HIGH GATE COMPUTER PHASE	- 200 SEC
7. LOW GATE COMPUTER PHASE	- 160 SEC
8. PITCHOVER COMPUTER PHASE	- 120 SEC
9. MANUAL RCS CONTROL	- 50 SEC
10. CONTACT LIGHT	- 10 SEC
11. TOUCHDOWN	- 0 SEC

NOTE: LUNAR MODULE PRIME COMPUTER SYSTEM WILL HANDLE PDI PHASE PROVIDING PROPER GMBAL ANGLES HAVE BEEN ENTERED AND LM IS CONFIGURED PROPERLY.
 MANUAL CONTROL IS RELEASED TO PILOT AFTER PITCHOVER PHASE (see disk 1). COMPUTER WILL GIVE FINAL LANDING COORDINATES.
 LUNAR MODULE PILOT MUST LAND IN FRONT OF THE APOLLO 17 SITE. LANDING MUST OCCUR WITHIN 20 FEET OF THE RTT 301 ANTENNA AND HARD DRIVE SYSTEM.

PLOTS MUST SELECT LM 3 BUTTON TO CONTINUE THE LUNAR MISSION.

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LUNAR LIFTOFF

CUE CARD

EVENT	TIME
1. ASCENT TANK ENABLE	- 135 SEC
2. FUEL PUMP ENABLE	- 125 SEC
3. RCS TANK ENABLE	- 120 SEC
4. ASCENT ENGINE ARM	- 110 SEC
5. ENTER GIMBAL DATA	- 105 SEC
6. SET GIMBAL	- 50 SEC
7. SET THRUST DURATION	- 40 SEC
8. SET THRUST PERCENTAGE	- 30 SEC
9. MASTER ARM	- 20 SEC
10. AUTO SEQ	- 10 SEC
11. ASCENT ENGINE IGNITION	- 2 SEC
12. LIFTOFF	- 0 SEC
13. PITCHOVER PHASE	+ 20 SEC
14. LOW GATE PHASE	+ 20 SEC
15. HIGH GATE PHASE	+ 20 SEC
16. ASCENT ENGINE CUTOFF	+ 225 SEC
17. RCS THRUST & CSM DOCK	+ 305 SEC
18. CSM LM DOCK	+ 400 SEC

TAURUS LITTROW

SPS ENGINE BURN

CUE CARD

EVENT	TIME
1. ENGINE BREAKER ENABLE	- 135 SEC
2. ENTER GIMBAL DATA	- 135 SEC
3. SET GIMBAL ANGLE	- 135 SEC
4. ENTER THRUST PERCENTAGE	- 135 SEC
5. SET THRUST DURATION	- 135 SEC
6. ARM SPS ENGINE	- 135 SEC
7. MASTER ARM ON	- 135 SEC
8. AUTO SEQUENCE ENABLE	- 135 SEC
9. IGNITION	- 135 SEC
10. MONITOR SPS DATA (CSM 2)	- 135 SEC
11. MONITOR SPS FUEL RESERVES	- 135 SEC
12. SPS ENGINE CUTOFF	- 135 SEC
13. CHECK GIMBAL ANGLES	- 135 SEC
14. CHECK STAR FINDER SYSTEM	- 135 SEC

NOTE: ALL CUE CARD ENGINE BURN
PROCEDURES ARE FOR REFERENCE ONLY.
ALWAYS FOLLOW MCC RADIO CALLS AND
DIRECTIONS.
CHECK ELECTRICAL OUTPUT DURING
ALL SPS ENGINE FIRINGS.
WITH AUTO SEQUENCE, NEVER ALLOW
PRIME COMPUTER TO REBOOT.

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POST LUNAR LANDING

CUE CARD

EVENT	TIME
1. MASTER ARM OFF	+ 5 SEC
2. RCS OFF	+ 5 SEC
3. FUEL PUMP OFF	+ 5 SEC
4. ARM JOYSTICK OFF	+ 10 SEC
5. QUAD PORT OFF	+ 10 SEC
6. QUAD STARBOARD OFF	+ 10 SEC
7. QUAD FWD/REV OFF	+ 10 SEC
8. OXIDIZER OFF	+ 15 SEC
9. HYDROGEN OFF	+ 15 SEC
10. RADAR OFF	+ 15 SEC
11. PGNS OFF	+ 15 SEC
12. AGS OFF	+ 15 SEC

POWER DOWN ALL NON ESSENTIAL SYSTEMS

WATCH ALL BATTERY AND FUEL QUANT ES

LISTEN FOR HISSING CAUSED BY PUMP OR TANK RUPTURE

LISTEN FOR RADIO FREQ CHANGES CALLED BY MCC

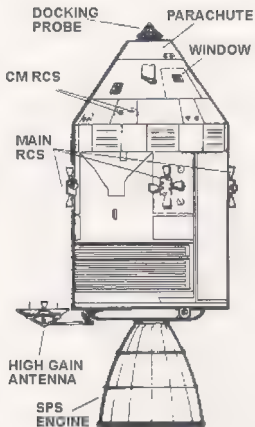
DO NOT DEPRESS LM CABIN OR ATTEMPT LUNAR

LIFTOFF WITHOUT MCC APPROVAL

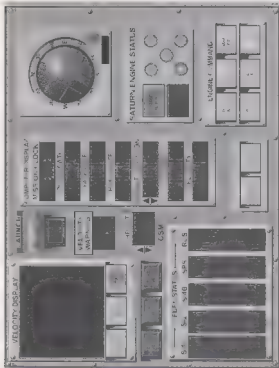
SPACECRAFT SYSTEMS
&
PANEL DRAWINGS

JSC LUNAR GENERIC, REV G 7/72

SPACECRAFT
SYSTEMS



COMMAND MODULE
 PANEL CSM 1
 REV K 8/71



CRVO CAUTION AND WARNING

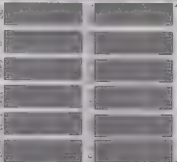


EPS - SIM STATUS DISPLAY



CSM3

ELECTRICAL STATUS

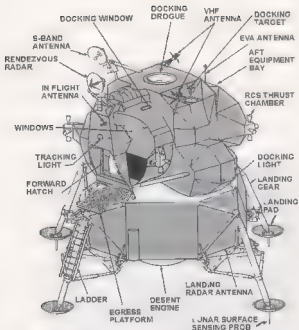


MANUAL AT-R SYSTEMS

FREQ ENC V HANGEL



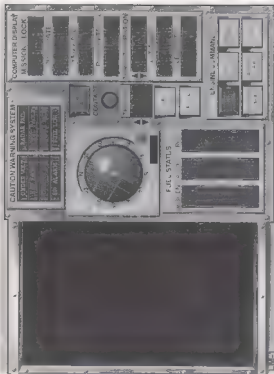
COMMAND MODULE
PANEL CSM-3
REV-K 9/71



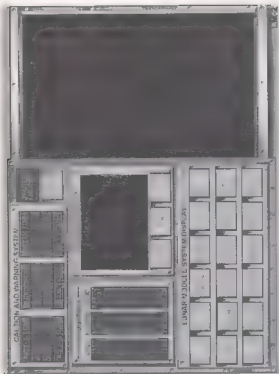
LUNAR MODULE

EXTERNAL OVERVIEW

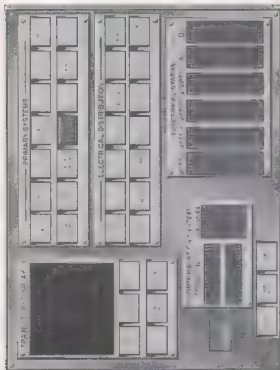
LUNAR MODULE
 PANEL LM 1
 REV. 8/71



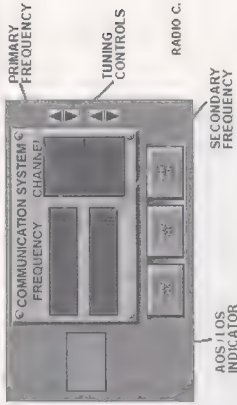
LUNAR MODULE
 PANEL LM 2
 REV H 1/71



LUNAR MODULE
 PANEL LM-3
 REV-M 9/71



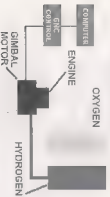
APOLLO SPACECRAFT RADIO SYSTEM CONTROLS



RADIO C. REV 3.4 1970

NOTE: SOLAR DISTURBANCE CAN CAUSE LOSS OF SIGNAL.

APOLLO SERVICE PROPULSION ENGINE SYSTEM

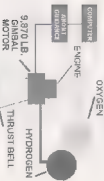


GIMBAL ANGLE DATA MUST BE
PRECISE TO AVOID TRAJECTORY
ERRORS & PROPELLANT WASTE

GNC COMPUTER CONTROLS
ALL ENGINE BELL MOVEMENTS

SET GIMBAL CONTROL FIXES
ENGINE BELL FOR ENGINE FIRING

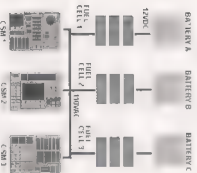
LUNAR MODULE DESCENT ENGINE



LUNAR MODULE ASCENT ENGINE



COMMAND MODULE ELECTRICAL SYSTEM ELECTRICAL FLOW



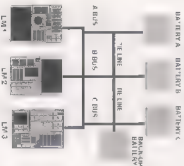
NOTE FUEL CELLS CAN NOT
BE RESTARTED AFTER PREMATURE
SHUTDOWN

BATTERIES MUST BE RECHARGED
DURING MISSION

BATTERY DRAIN TIME
MAX 16 MINUTES

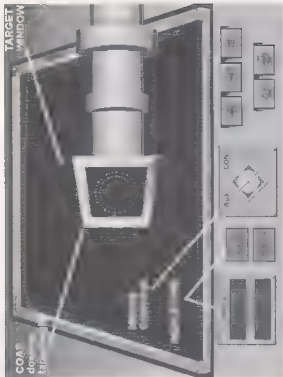
REV 2.7.71

LUNAR MODULE ELECTRICAL SYSTEM ELECTRICAL FLOW



NOTE LUNAR MODULE
ELECTRICAL SYSTEM
CAN NOT REGENERATE
ELECTRICAL POWER

LUNAR MODULE TOTAL
BATTERY LIFE 16 MINUTES
TOTAL

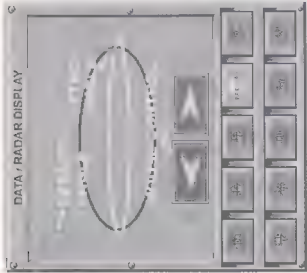


COMMAND MODULE
AUXILIARY SIGHT
DOCKING DISPLAY

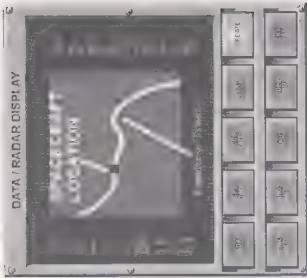
CREW OPTICAL
ALIGN SIGHT (COAS)
SYSTEM



CSM 3



REENTRY CONTROL PANEL



REFNTRY DISP. AY PANEL

CONJUGATE MODULE



NOTE: FOR SUCCESSFUL MISSION

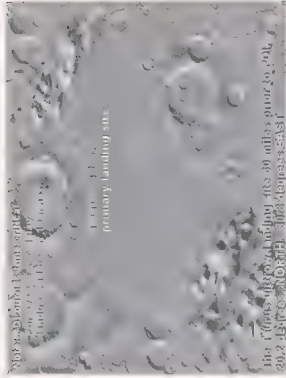
CREW OPTICAL
ALIGN S GHT (COAS)



LUNAR MAPS

JSC LUNAR GENERIC, REV K 3/15/73

LANDING MAP



THE TAU RUS LITROW
LANDING SITE 60 MILES
PRIOR TO PDI

X 133 DEGREES, NORTH
Y- 93 DEGREES, EAST

NOTE:

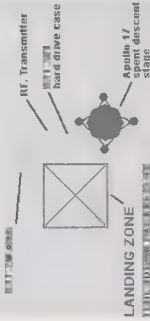
PDI BURN S
TIME CRITICAL

FOR EVERY 5 SEC
DELAY, LANDING
WILL BE 10K OFF IP

IF ENGINE BURN IS
DELAYED > 20 SEC
THEN HOLD FOR NEXT
ORBIT PASS

Taurus Littrow prime landing site

(overhead view)



If forward velocity > 7ft per sec abort.
 If descent velocity > 10 ft per sec abort.
 If target distance > 30 ft negative pick up.

TAURUS LITROW
 LANDING SITE
 TOUCH-DOWN
 PARAMETERS

FORWARD VELOCITY
 IF > THAN 7FT PER
 SECOND AUTO ABORT
 LANDING

DESCENT VELOCITY
 IF > THAN 10FT PER
 SECOND AUTO ABORT
 LANDING

TARGET DISTANCE
 IF > THAN 10FT TO RTT301
 NEGATIVE PICK UP

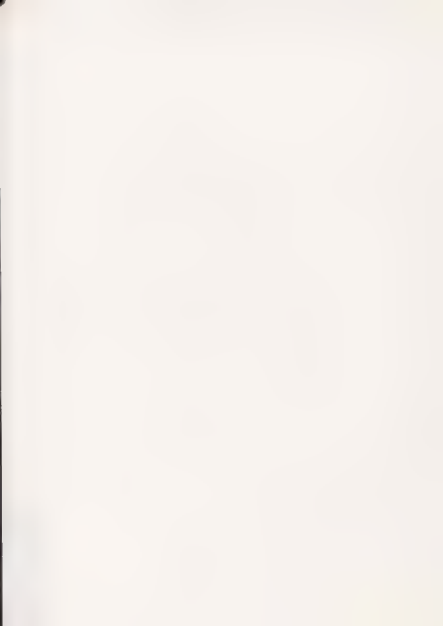
LM ASCENT FUEL
 F < THAN 10LBS THEN
 AUTO ABORT LANDING

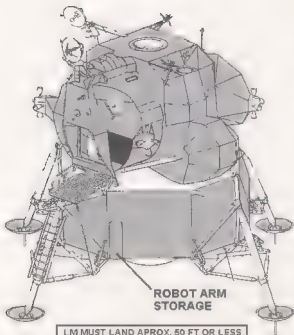
RCS FUEL
 F < THAN 3LBS THEN
 AUTO ABORT , AND NO

LANDING SITE DATA

JSC LUNAR GENERIC, REV K 3/15/73

LANDING SITE
DATA





LM MUST LAND APROX. 50 FT OR LESS
FROM TARGET FOR CAPTURE

ROBOT CPU IS PRE-PROGRAMED
FOR EVA MANEUVER

LUNAR MODULE FUEL SYSTEM

ENGINE

LM FUEL T LINE
PUMP SYSTEM

RCS

DESCENT
TANK

ASCENT
TANK

RCS
TANK

NOTE: BY USING THE FUEL T LINE PUMP SYSTEM, PILOTS MAY
RESUPPLY A DEPLETED LM FUEL TANK

ADVISE BEFORE LIFTING OFF LUNAR SURFACE PUMP OUT REMAINING DESCENT
STAGE FUEL INTO RCS OR
ASCENT FUEL TANKS BY UTILIZING FUEL T LINE (M2)

LUNAR MODULE LANDING PROCEDURES

BEFORE LANDING ATTEMPT

**COMPLETE ALL LM LANDING CONFIG
STEPS AS PER CHECK LIST**

DURING LUNAR DESCENT

- 1 MON TOR FUEL RESERVES
- 2 MON TOR LM CAUTION & WARNING
- 3 MON TOR DESCENT TRAJECTORY
- 4 MON TOR LM COMP STATUS
- 5 MON TOR LM THRUST STATUS

MANUAL CONTROL IS GIVEN TO PILOT AT PITCHOVER PHASE

**PILOT MUST USE LM LANDING DISPLAY RADAR (ALIGN SIGHT
LM2) FOR ALL LUNAR LANDING ATTEMPTS.**

LUNAR MODULE POST-LANDING PROCEDURES

**AFTER LUNAR TOUCHDOWN
COMPLETE ALL POST LANDING CONFIG STEPS**

AFTER CONTACT LIGHT

- 1 MASTER ARM OFF
- 2 DESCENT ENGINE ARM OFF
- 3 MONITOR BATTERY LEVELS
- 4 MONITOR LM COMP STATUS
- 5 MONITOR LM RCS FUEL QUANTITY
- 6 MONITOR LM ASCENT FUEL QUANTITY
- 7 BEGIN EVA PROCEDURES (see eva)

**AUTO FUEL PUMPING (FUEL TIE LINE LM2) IS RECOMMENDED IF
FUEL REMAINS IN DESCENT STAGE**

CAUTION: EXPLOSION MAY OCCUR AT ASCENT IGNITION, IF
DESCENT STAGE FUEL IS NOT REMOVED

LUNAR MODULE PRIMARY SYSTEM ELECTRICAL LOADS

PANEL (LM1) ENGINE GROUP 3.5 AMPS	PANEL (LM3) TRAJECTORY DISPLAY 3.1 AMPS
PANEL (LM1) COMPUTER DISPLAY 3.2 AMPS	PANEL (LM3) AUTO PLOT COMPUTER 3.2 AMPS
PANEL (LM1) ABORT ARM SYSTEM 2.0 AMPS	PANEL (LM3) FUEL SYSTEM 1.6 AMPS
PANEL (LM1) C&W GROUP 1.0 AMPS	PANEL (LM3) RCS GROUP 1.9 AMPS
PANEL (LM2) RADAR GROUP 7.5 AMPS	PANEL (LM3) RADIO SYSTEM 2.5 AMPS
PANEL (LM2) C&W GROUP 2.0 AMPS	PANEL (LM3) ROBOT ARM 6.5 AMPS
PANEL (LM2) CRYOGENICS DISPLAY 1.5 AMPS	PANEL (LM3) SCS 2.2 AMPS
PANEL (LM2) MJ COMPUTER SYSTEM 2.5 AMPS	PANEL (LM3) PNGS 2.6 AMPS
PANEL (LM2) ECS GROUP 3.2 AMPS	PANEL (LM3) AGS 1.3 AMPS
PANEL (LM2) PRIME COMPUTER 3.6 AMPS	PANEL (LM3) TANK ST R 6.1 AMPS
PANEL (LM2) BACKUP COMPUTER 3.5 AMPS	PANEL (LM3) ENGINE HEATER 8.8 AMPS
PANEL (LM2) GEN COMPUTER SYSTEM 2.7 AMPS	
PANEL (LM2) FUEL PUMP SYSTEM 1.8 AMPS	
PANEL (LM2) EXT CAMERA SYSTEM 4.2 AMPS	

56.5 TOTAL AMPS WITH ALL CRITICAL LUNAR MODULE SYSTEMS ACTIVATED.

WARNING: PILOTS MUST CONSERVE BATTERY POWER DURING LONG EVA MISSIONS ALWAYS POWER DOWN NON ESSENTIAL FLIGHT SYSTEMS

NOMINAL DESCENT TRAJECTORY

HI-GATE

High Gate: ALT = 18,000 ft
Range = 40,000 ft

Low Gate: ALT = 14,000 ft
Range = 28,000 ft

Lunar Contact Sequence

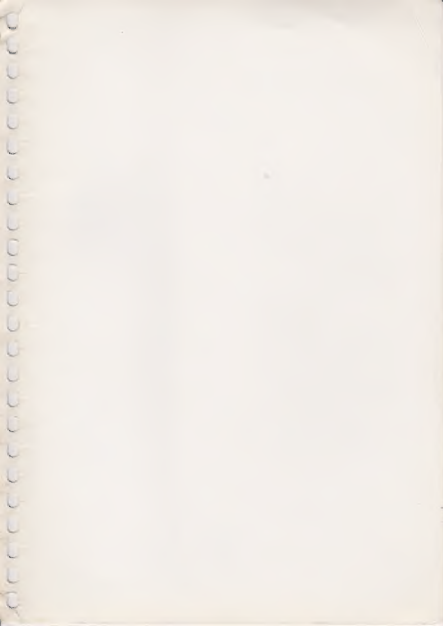
- 1. Apollo 11 reaches lunar surface
- 2. Lunar module descends to lunar surface
- 3. Lunar module settles to lunar surface



NOTES

NOTES:

NOTES:





<http://www.project2.com>